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Affect Regulation Training (ART) for Alcohol Use Disorders: Development of a Novel Intervention for Negative Affect Drinkers

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Abstract

Although negative affect is a common precipitant of alcohol relapse, there are few interventions for alcohol dependence that specifically target negative affect. In this Stage 1a/1b treatment development study, several affect regulation strategies (e.g., mindfulness, prolonged exposure, distress tolerance) were combined to create a new treatment supplement called Affect Regulation Training (ART), which could be added to enhance Cognitive-Behavioral Therapy (CBT) for alcohol dependence. A draft therapy manual was given to therapists and treatment experts before being administered to several patients who also provided input. After two rounds of manual development (Stage 1a), a pilot randomized clinical trial ($N = 77$) of alcohol-dependent outpatients who reported drinking often in negative affect situations was conducted (Stage 1b). Participants received 12-weekly, 90-minute sessions of either CBT for alcohol dependence plus ART (CBT + ART) or CBT plus a healthy lifestyles control condition (CBT + HLS). Baseline, end-of-treatment, and 3- and 6-month posttreatment interviews were conducted. For both treatment conditions, participant ratings of treatment satisfaction were high, with CBT + ART rated significantly higher. Drinking outcome results indicated greater reductions in alcohol use for CBT + ART when compared to CBT + HLS, with moderate effect sizes for percent days abstinent, drinks per day, drinks per drinking day, and percent heavy drinking days. Overall, findings support further research on affect regulation interventions for negative affect drinkers.

1. Introduction

Both theory and research suggest that the desire to regulate one's affective experience is an important motive underlying alcohol use (e.g., Baker et al., 2004; Cooper et al., 1992). Negative affect in particular has been commonly cited as a reason for alcohol use among alcohol abusers in treatment (e.g., Annis & Graham, 1995; Bradizza & Stasiewicz, 2003) as well as relapse among recovering alcoholics (e.g., Connors, Maisto, & Zwiak, 1998). Although the use of alcohol to regulate negative affective states may be viewed by the individual as adaptive in the short term, in the long term, drinking to regulate negative affect

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can prove to be a maladaptive response. Specifically, using alcohol to manage negative affect has been shown to be a risk factor for developing an alcohol use disorder (Carpenter & Hasin, 1999), including greater alcohol consumption and more drinking problems (Holahan, et al., 2001; 2003). Despite the strong links between negative affect and drinking, very few studies have directly assessed whether interventions that target negative affect positively impact emotional states or drinking outcomes among alcohol dependent men and women (e.g., Berking, Wupperman, Reichardt, Pejic, Dippel, & Znoj, 2008; Berking, Margraf, Ebert, Wupperman, Hogman, & Junghanns, 2011; Monti, Abrams, Binkoff, et al., 1990). The current study was designed to address this gap in the literature and reports on the development and evaluation of a novel treatment designed to address the issue of negative affect drinking. Importantly, treatment development followed the stage model of behavioral therapies research (Rounsaville, Carroll, & Onken, 2001).

Negative affect has been proposed as a central mechanism in the development and maintenance of substance use and substance use disorders (e.g., Baker et al., 2004; Stasiewicz & Maisto, 1993; Pandina, Johnson, & Labouvie, 1992). Theories such as the tension-reduction hypothesis (Greeley & Oei, 1999) or stress-response dampening model (Sher, 1987) highlight alcohol's role in relieving negative affect. Similarly, conditioning models of addiction (Siegel, 1983; Stewart, deWit, & Eikelboom, 1984; Wikler, 1965; Wise, 1988) posit that negative affect can either elicit alcohol and drug conditioned responses (albeit different types of conditioned responses) or enhance the incentive value of alcohol or other drugs. For example, Mowrer's (1947) Two-Factor Avoidance Theory, as applied to alcohol and other substance use disorders (c.f., Stasiewicz & Maisto, 1993), maintains that a conditioned emotional response is sufficient to elicit substance use, which is then maintained by the reinforcement (i.e., negative reinforcement) resulting from escape or avoidance of an unpleasant emotional stimulus. To varying degrees, these models point to negative affect as an important factor in the development and maintenance of drug use, and to negative reinforcement (through removal of negative affect) as a likely mechanism maintaining alcohol use among those who drink to reduce negative affect.

Negative affect is a natural part of everyday life requiring the capacity for effective selfregulation. Affect regulation, or the capacity to regulate affective states, generally refers to the cognitive and behavioral strategies that people use to keep emotions within tolerable levels (e.g., Gross, 1998; Westen, 1994). According to Gross & Thompson (2007), affect regulation is superordinate to emotion regulation and includes other constructs such as coping and distress tolerance. While these constructs may be similar in their function (i.e., to reduce negative affect), they may also be distinguished by the response they are meant to target. Emotion regulation targets characteristics of the emotional response itself (e.g., latency, magnitude, duration), coping targets cognitive and situational antecedents of the emotional response, and distress tolerance, according to Linehan, Bohus, & Lynch (2007), targets behavioral reactivity (e.g., impulsive acts, secondary emotions) to emotional responses.

Individuals who are less skilled at affect regulation may resort to a range of unhealthy behaviors, including excessive alcohol use, in an attempt to regulate negative affect that may be perceived as intolerable (Wiser & Telch, 1999). Furthermore, the association between negative affect and alcohol use disorders may be mediated by deficits in self-regulatory processes such as affect regulation (Wills et al., 1999), as well as the perceived self-efficacy for affect regulation (Bandura et al., 2003). There also is evidence that coping skills, a subset of affect regulation strategies, moderate the relationship between stress or negative affect and alcohol use (Holahan et al., 2001; 2003) and that poor affect regulation skills may increase risk for relapse in situations involving negative affect (Berking et al., 2011). Thus, the combination of negative affect and deficits in the ability to regulate it has implications

for the development of, as well as the recovery from, alcohol problems. However, few studies have attempted to assess and treat affect regulation difficulties in alcoholic samples (e.g., Berking et al., 2011). An affect regulation perspective proposes adding treatment components to help clients become more comfortable with arousing emotional experience, more able to access and utilize emotional information in adaptive problem solving, and better able to modulate emotional experience and expression according to situational demands. Although there is evidence that standard treatments for alcohol dependence are associated with reductions in negative affect (e.g., Brown & Schuckit, 1988; Brown, Irwin, & Schuckit, 1991; Witkiewitz, Bowen, & Donovan, 2011), the addition of the aforementioned treatment components to a standard treatment for alcohol dependence may lead to greater reductions in negative affect and better alcohol treatment outcomes for alcohol dependent clients. Better outcomes may result both from greater reductions in negative affect and perhaps additional benefit from weakening the link between negative affect and alcohol and/or alcohol cues. The notion of directly targeting negative affect in the treatment of alcohol use disorders (AUD), especially those individuals who report drinking often and heavily in negative affect situations, has received supported in a recent clinical trial (Kushner et al., 2012) and in a meta analysis examining supplemental treatments for depressive and anxiety disorders in AUD patients (Hobbs, Kushner, Lee, Reardon, & Maurer, 2011).

1.1. Affect Regulation Training (ART) for Negative Affect Drinkers

Affect Regulation Training (ART) was developed following a stage model of behavioral therapies research (Rounsaville et al., 2001), which recommends a focus on therapy development and manual writing (Stage 1a) prior to initial evaluation of the treatment in a pilot trial (Stage 1b). The emphasis of these studies is less on statistical significance and more on iteratively developing a treatment manual based on provider and client feedback and generating effect size estimates to assist researchers and funding agencies in determining whether additional research is warranted. Accordingly, the focus of Stage 1a was on the development of a treatment manual for alcohol dependence that could be administered as a treatment supplement to enhance standard cognitive behavioral therapy (CBT) for alcohol dependence. More specifically, ART was developed to address the needs of alcohol dependent men and women who reported frequent heavy drinking in negative emotional situations (i.e., negative affect drinkers). Based upon the literature linking negative affect and drinking, including the associations between deficits in affect regulation and problematic use, ART was designed to include cognitive and behavioral strategies addressing (a) prolonged direct experiencing of emotion (utilizing guided imagery techniques), (b) mindfulness skills and (c) distress tolerance skills. These affect-regulation strategies were derived from interventions that address a range of mental health disorders (e.g., panic, PTSD, depression, borderline personality disorder), including substance use disorders, and differ from traditional cognitive-behavioral skills-based interventions by placing greater emphasis on increasing the patient's ability to experience and regulate the subjective, physiological and behavioral components of negative emotion and less emphasis on teaching the patient how to "change" the emotion or the situational and cognitive antecedents of the emotion. Specifically, mindfulness and prolonged direct experiencing instruct the patient to focus on the emotional response itself, and to let thoughts, feelings, and sensations come and go, rise and fall away, without attempting to exert control (e.g., Breslin et al., 2002).

Based on the theoretical and empirical literature reviewed above, a treatment approach for alcohol dependence that incorporates several affect regulation techniques may have unique value. The Affect Regulation Training (ART) intervention described herein takes an important step towards developing a treatment approach that can be added to enhance

existing behavioral treatments for alcohol dependence. The current study reports on a randomized clinical pilot study (Stage 1b) designed to evaluate the effectiveness of ART to address the problem of negative affect drinking. Specifically, individuals diagnosed with alcohol dependence and endorsing a negative affect drinking profile were randomized to receive either standard CBT plus ART (i.e., experimental treatment condition) or CBT plus a health and lifestyle intervention (HLS; active control condition). The study was designed to determine if those receiving ART would a) show greater improvement on drinking outcomes and b) a greater reduction in negative affect and greater improvements in affect regulation skills when compared to those receiving HLS.

2. Materials and methods

2.1. Participants

Participants were 77 individuals (female $n = 38$) seeking outpatient treatment for alcohol-related problems and reporting a negative affect drinking profile. Inclusion criteria were: a) seeking outpatient alcohol treatment services, b) current DSM-IV diagnosis of alcohol dependence, c) meeting criteria for a negative affect drinking profile (defined in Section 2.2.4 below), and d) living within commuting distance of the program site. Exclusion criteria were: a) acute psychosis, b) use of medications (i.e., disulfiram, naltrexone) that may modify alcohol use, c) made changes in past 3 months in dose or type of prescription medication that affects mood (e.g., antidepressants, anxiolytics), d) any drug use diagnosis other than for nicotine and cannabis, and e) legally mandated to attend treatment.

Participants were predominantly Caucasian (84.4%; 14.3% African American and 1.3% other), married or living with a partner (42.9%; 24.7% never married, 22.1% divorced, 3.9% single widowed, and 6.5% married but separated), with a mean age of 45.7 ($SD = 11.1$) and 14.0 ($SD = 2.1$) years of education. Sixty-one percent reported part-time or full-time employment, and 19.5% were currently looking for work. Fifty-one percent indicated earning greater than \$40,000 during the past year, with 13.2% reporting less than \$10,000 and 23.7% greater than or equal to \$70,000 earned during the past year. Approximately 43% reported receiving previous outpatient treatment for alcohol problems and 15.1% reported a past episode of inpatient treatment. At intake, participants reported 27.5% ($SD = 21.1$) days abstinent, an average of 7.1 ($SD = 5.8$) drinks per day, and 9.7 ($SD = 7.6$) drinks per drinking day in the previous 6 months. The mean score on the Dysfunctional Emotional Regulation Scale was 87.5 and is comparable to other clinical samples (i.e., social anxiety disorder, Kuo & Linehan, 2009; generalized anxiety disorder, Roemer et al., 2009; cocaine dependence, Fox, Axelrod, Paliwal, Sleeper, & Sinha, 2007). Regarding comorbid diagnoses, 48.1% met criteria for generalized anxiety disorder, 45.5% major depressive disorder, 15.6% social phobia, 11.7% dysthymia, 3.9% panic disorder, 1.3% post-traumatic stress disorder, and 14.3% for marijuana abuse or dependence. Finally, 29% of the sample reported taking either an anxiolytic or antidepressant medication at intake. As noted above, to be eligible for the study, there had to have been no changes in dose or type of medication during the 3-month period prior to entering the study.

2.2 Measures

2.2.1. Demographics—Demographic characteristics, current status information (e.g., marital status, employment) and substance abuse treatment history were obtained using a comprehensive background questionnaire administered during the initial intake appointment.

2.2.2. Mini International Neuropsychiatric Interview—The Mini International Neuropsychiatric Interview (MINI; Sheehan et al., 1998) was used to obtain a partial list of

DSM-IV Axis I diagnoses. The sections for alcohol use, drug use, depression, dysthymia, generalized anxiety, panic, social anxiety, and post-traumatic stress disorder were administered by trained research interviewers.

2.2.3. Timeline Follow-Back—The Timeline Follow-Back (TLFB; Sobell & Sobell, 1992) is a calendar-based retrospective recall interview of daily alcohol use. The TLFB was used to estimate the number of standard drinks consumed each day and percent days abstinent over the 6 month period prior to the date of the initial intake assessment.

2.2.4 Inventory of Drug Taking Situations—The Inventory of Drug Taking Situations – Alcohol version (IDTS; Annis, Turner, & Sklar, 1997) provides a profile of situations in which an individual reports drinking heavily over the past year. Heavy drinking is measured across eight subscales including unpleasant emotions, physical discomfort, pleasant emotions, testing personal control, urges and temptations to drink, conflict with others, social pressure to drink, and pleasant times with others. Participants whose highest subscale score was either unpleasant emotions (e.g., “When I felt anxious or tense about something;” “If I was depressed about things in general.”) or conflict with others (e.g., “When I felt tense or uneasy in the presence of someone;” or “When there were fights at home.”) met the study inclusion criteria for having a negative affect drinking profile.

2.2.5. Alcohol Abstinence Self-Efficacy Scale—The Alcohol Abstinence Self-Efficacy Scale (AASE; DiClemente, Carbonari, Montgomery, & Hughes, 1994) evaluates self-reported self-efficacy to abstain from drinking in 20 situations.

2.2.6. Positive and Negative Affect Scale—The Positive and Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988) is a 20-item scale that has been found to have high test-retest reliability and content validity and was administered to assess levels of non-specific positive and negative mood.

2.2.7. Emotion Regulation Questionnaire—The Emotion Regulation Questionnaire (ERQ; Gross & John, 2003) is a 10-item questionnaire that measures emotion reappraisal and suppression.

2.2.8. Difficulties in Emotion Regulation Scale—The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) is a 37-item measure that assesses self-reported emotion regulation difficulties. The DERS has six subscales including: non-acceptance of emotions, difficulties engaging in goal-directed behavior when distressed, impulse control difficulties, lack of emotional awareness, limited access to emotion regulation strategies and lack of emotional clarity.

2.2.9. Distress Tolerance Scale—The Distress Tolerance Scale (DTS; Simons & Gaher, 2005) is a 15-item measure of emotional distress tolerance. It includes items related to the regulation of emotion, acceptance of distressing emotions, and expectations of ability to tolerate and function adequately when distressed.

2.2.10. Negative Mood Regulation Expectancies Questionnaire—The Negative Mood Regulation Expectancies Questionnaire (NMRQ; Catanzaro & Mearns, 1990) is a 30-item measure of a person’s beliefs about terminating negative moods.

2.2.11. Kentucky Inventory of Mindfulness Skills—The *Kentucky Inventory of Mindfulness Skills* (KIMS; Baer, Smith, & Allen, 2004) is a 39-item measure of

mindfulness skills. The four subscales of the KIMS are Observe, Describe, Act with Awareness, and Accept without Judgment.

2.2.12. Mindful Attention Awareness Scale—The Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003) is a 15-item measure of mindfulness that was administered to assess individual differences in the frequency of, and propensity to, experience mindful states over time.

2.2.13. Coping Responses Inventory—The Coping Responses Inventory (CRI; Moos, 1997) is a 48-item self-report measure that identifies cognitive and behavioral responses that individuals use to cope with a recent problem or stressful situation. The 8 scales include Approach Coping Styles (Logical Analysis, Positive Reappraisal, Seeking Guidance, and Support and Problem Solving) and Avoidant Coping Styles (Cognitive Avoidance, Acceptance or Resignation, Seeking Alternative Rewards, and Emotional Discharge).

2.2.14. Working Alliance Inventory-Short Form—The Working Alliance Inventory-Short Form (WAI-S; Tracey & Kokotovic, 1989) is a 12-item measure of working alliance between therapist and client. The reliability and validity of the WAI-S are comparable to the 36-item WAI (Busseri & Tyler, 2003). The WAI-S was administered at sessions 2, 4, 6, 8, 10 and 12 to patients and therapists in both treatment groups.

2.2.15. Client Satisfaction Questionnaire—The Client Satisfaction Questionnaire (CSQ-8; Greenfield & Attkinson, 1989) is an 8-item widely used measure of general satisfaction with treatment.

2.3 Procedure

2.3.1 Stage 1A: Treatment Manual Development—During the treatment manual development phase for ART modifications and refinements of different versions of the manual were completed by the investigators and were based on oral and written feedback from expert consultants, therapists conducting the treatment sessions, and the participants themselves. The first version of the manual was developed by the research team and then evaluated with a small group of patients ($N = 10$). In this early phase of treatment manual development, the therapists had input into modifications of the manual based on their experience administering the treatment with the patients. The patients also had input into manual development and were administered a brief End of Session Questionnaire following each of the 12 sessions. For example, patients responded to questions about what was helpful during the session, whether the session content was clear, how the session content could be made more helpful, and an overall rating of the session (1 = Poor/Not Helpful to 7 = Excellent/Very Helpful). Based on therapist and patient feedback, the manual was revised after all sessions of the first round of TAU + ART were completed. The new, revised version of the manual (Version II) was then used for a second round of TAU + ART ($N = 10$). After the second round of TAU + ART was completed, the manual was again revised based on patient and therapist feedback and the new version of the manual (Version III) was used in the Stage 1b pilot study.

2.3.2 Participant Recruitment—Participants were recruited through radio and newspaper advertisements (i.e., direct recruitment) and the Clinical Research Center (CRC). The CRC is a publicly-funded outpatient substance abuse clinic at Research Institute on Addictions serving the Western New York community. The CRC offers a variety of services for substance use disorders, including brief screening interviews, comprehensive assessments, medical evaluations, and a range of treatment services (e.g., CBT, brief alcohol interventions) for those self-referred or referred by other community agencies. Individuals

calling in response to media advertisements were screened for initial inclusion criteria and provided a description of the treatment program; those calling the CRC directly were screened in the same manner. Eligible individuals willing to participate were scheduled for an intake appointment with a research interviewer. During the intake appointment, informed consent was obtained and the remaining eligibility criteria (e.g., diagnosis, negative affect drinking profile) were assessed. Individuals meeting diagnostic criteria for alcohol dependence and a negative affect drinking profile were then scheduled for a baseline assessment during which additional questionnaires pertaining to substance use, mindfulness, and affect regulation skills were administered. Following the baseline assessment urn randomization (Wei, 1978) was employed to assign participants to treatment condition. Participants were randomized to one of two treatment conditions according to gender, alcohol problem severity, presence of a comorbid mood or anxiety disorder, negative mood regulation expectancies, and self-efficacy to remain abstinent. CONSORT reporting of participant flow is depicted in Figure 1.

2.3.3. Stage 1B: Pilot Study—The major aim of the pilot study was to compare the clinical efficacy of 12 sessions of cognitive-behavioral therapy for alcohol dependence plus an affect regulation training supplement (CBT + ART; $n=39$) to CBT plus a health and lifestyles treatment supplement (CBT + HLS; $n=38$). Both treatments were manual guided and consisted of weekly, 90-minute therapy sessions for 12 weeks (see Table 1 for summary of treatment sessions). The ART and HLS interventions consisted of 12, once-per-week 45-minute individual sessions that were “piggybacked” to the end of each weekly CBT session. Therefore, each weekly treatment session was 90 minutes in duration with the first 45 minutes devoted to CBT and the remaining 45 minutes devoted to ART or HLS. Following the baseline assessment, eligible participants who entered treatment were reassessed at end-of-treatment, and at 3- and 6-months post treatment.

2.3.4. Affect Regulation Training and Health and Lifestyles Treatment Supplements—The ART treatment is comprised of several affect regulation strategies adapted from existing therapies that have specific procedures for helping patients develop the capacity to regulate negative affect in healthy ways. Therapies consulted in the development of ART included Dialectical Behavior Therapy (Linehan, 1993), Mindfulness-Based Cognitive Therapy for Depression (Segal, Williams, & Teasdale, 2002), and Prolonged Exposure Therapy for PTSD (Foa, Hembree, & Rothbaum, 2007). Specific strategies adapted for use in ART included behavioral analysis of interpersonal and intrapersonal drinking situations involving negative affect (Sobell, Toneatto, & Sobell, 1994), training in behavioral coping skills that help people identify their emotions and learn distress tolerance skills (Linehan, 1993), mindfulness-based cognitive strategies (Marlatt, 2002; Segal et al., 2002), and exposure-based strategies aimed at blocking avoidance and reducing maladaptive emotions (Foa et al., 2007). The mindfulness sessions included a process of observing and experiencing emotion, designed to increase attention to the present moment and to experience the emotion without judgment or avoidance. The exposure-based sessions included imaginal presentations of individualized negative emotional drinking situations. The negative emotional drinking scenes were developed using a guided imagery worksheet developed for this study. The worksheet included questions about the participant’s thoughts, feelings, physical sensations, and other internal and external cues present during the negative emotional drinking situation. Prior to each imaginal scene presentation, the therapist instructed each participant to “really feel the emotions, to accept them and remain in contact with them, without trying to suppress them or push them away.” The HLS treatment was intended to serve as an active control and provided education about a variety of health-related topics (see Table 1). Treatment sessions included information and discussion with the clients.

During the process of designing the pilot study, two questions arose: (1) What was the best format for delivering ART; and (2) What was the most appropriate control condition against which to compare ART? Regarding the format of ART, two possible options were considered: (a) to make ART a stand-alone intervention for alcohol dependence; and (b) to include ART as a treatment supplement that could be added to existing treatments for alcohol dependence. The advantage of the first option is that there would be several excellent treatments for alcohol dependence that could serve as a control condition. However, ART places greater emphasis on affect regulation strategies and relatively less emphasis on specific strategies for changing drinking behavior. It did not seem prudent to develop a stand-alone intervention for alcohol dependence that did not focus on achieving and maintaining abstinence from alcohol. Thus, ART was included as a supplement to CBT for alcohol dependence.

Having designated ART as a treatment supplement, it was necessary to find an appropriate control condition. The Health and Lifestyle (HLS) control supplement was chosen for three reasons: (1) a version of a HLS enhancement had been used successfully as a control intervention in a previous clinical trial conducted at the clinic (Connors & Walitzer, 2001); (2) other health and lifestyle sessions have been described in the literature and appear in published treatment manuals (e.g., NIDA's Therapy Manuals For Drug Addiction series); and (3) these existing HLS supplements minimize discussion of affect, were not skills-based, were easily adapted for use in our project, and possessed educational value of some relevance to alcohol dependent individuals (e.g., DWI, Sleep, Nutrition).

2.3.5. Brief Description of Cognitive Behavioral Therapy for Alcohol

Dependence—All participants, regardless of whether they received ART or HLS, received 12 weekly sessions of CBT for alcohol dependence (Kadden et al., 1992). The CBT is fully manualized and contains material for 12 sessions (see Table 1). The 12 sessions selected for inclusion in this study minimized emphasis on affect-related topics. In addition, the treatment components (e.g., discussion of AA, significant-other session, monitoring progress) did not overlap with the ART or HLS treatment content. The main goal of CBT was to help patients achieve abstinence from alcohol.

Although the 12 CBT sessions did not include content directly targeting negative affect (e.g., anger management or management of negative moods), negative affect is addressed in one CBT session (i.e., session 5). In this session, the category *thoughts/emotions* is one component of the functional analysis of drinking situations and is included as part of the patients' self-monitoring homework assignment. The common approach to addressing negative affect in this session is through an analysis of antecedent events (i.e., situations, thoughts), and how changing the situation and/or one's thoughts may lead to changes in emotion. Therefore, while negative affect may be discussed in session 5, the amount of attention given to negative affect and the way in which the therapist addresses negative affect differs markedly from the proposed ART intervention. Addressing negative affect in this way also preserves the integrity of the CBT intervention.

2.3.6. Therapist Selection and Training—Three therapists received training in administering both the ART and HLS interventions by (a) reading the respective treatment manual, (b) participating in a 3-day training session, and c) rehearsing the in-session exercises and conducting role plays. All treatment sessions were audio-taped for later review. Weekly group and individual supervision with therapists was conducted with a focus on adherence to the treatment, enhancing competent delivery of the interventions, concerns about specific patients, and preparation for subsequent sessions.

2.3.7. Development of Therapist Adherence Measures—A set of therapist adherence measures was developed for ART following recommendations put forth by Waltz et al. (1993) and include the following four types of items: (a) therapist behaviors that are unique to the intervention and essential to it, (b) behaviors that are essential to the intervention but not unique to it, (c) behaviors that are compatible with the intervention, and therefore not prohibited, but neither necessary nor unique, and (d) behaviors that are proscribed. Following the Stage 1a manual development phase, a set of written instructions was developed that allowed two independent raters to assess therapist adherence to the manual. During the Stage 1b pilot study, 20% of all sessions were rated for adherence (a sampling from each of the 12 sessions was reviewed) and an effort was made to review an equal number of sessions conducted by each of the three therapists.

2.4. Data Analytic Strategy

To examine the effect of ART on drinking outcomes, the data from participants who provided complete end-of-treatment data were analyzed using multilevel modeling (i.e., HLM 7.0; $n = 60$; HLS = 28, ART = 32). One advantage of this approach is the handling of missing data at 3- and 6-month follow-up. Specifically, HLM analyzes data using listwise deletion at level one (measures), not level two (persons), thereby including all participants in the analysis while providing reliable and unbiased estimates. Parameters were estimated using restricted maximum likelihood estimation and tested with robust standard errors. For all drinking outcomes (4 time points; baseline, end-of-treatment, 3-month follow-up, 6-month follow-up), intercepts, linear, and quadratic effects were modeled as random effects. Treatment condition (HLS=0, ART=1) was entered as a level two moderator on all level 1 effects (i.e., intercept, linear, quadratic). In addition, the starting values (i.e., baseline) for the main drinking outcomes were repositioned to minimize the potential for misattributing treatment effects to pretreatment changes that have been noted in recent alcohol treatment clinical trials (Epstein et al., 2005; Morgenstern et al., 2007; Stasiewicz et al., 2013). Specifically, alcohol consumption was calculated by averaging drinking during the two-week period prior to treatment session 1. This provides a more accurate assessment of change attributed directly to the interventions and removes from the analyses those changes made prior to treatment entry (see Laurenceau, Hayes, & Feldman, 2007). For all non-drinking outcomes (i.e., treatment process variables), similar analyses were conducted; however, only baseline and end-of-treatment data were examined because the primary focus was on how these variables change over the course of treatment. Further, the intercept was estimated as a random effect, and the time effect was estimated as fixed to allow for convergence. Prior to analysis, all variables were examined for outliers and non-normality and deemed to be within acceptable limits. Raw means and standard deviations for all drinking outcomes are presented in Table 2.

3. Results

3.1. Preliminary Analyses

Several preliminary analyses were conducted prior to conducting the primary drinking and non-drinking outcome analyses. First, we examined potential differences between those providing end-of-treatment data and those who dropped out. Results revealed no differences on baseline assessments for percent days abstinent, drinks per drinking day, percent heavy drinking days, substance dependence (i.e., SADD), or negative affect drinking situations (IDTS unpleasant emotions and conflict with others subscales). However, a significant difference was noted for age, such that those who dropped out during treatment were younger (40.3, $SD = 14.1$) compared to those who completed the end-of-treatment assessment [47.2, $SD = 9.7$; $F(1, 75) = 5.46$, $p = .022$]. Importantly, no differences in rate of dropout were noted between ART ($n = 7$) and HLS ($n = 10$), $\chi^2(1) = .78$, $p = .421$.

Furthermore, no differences were noted at end-of-treatment ($n=60$) between those who provided 3- and 6-month follow-up ($n=49$) versus those who did not complete either the 3- or 6-month follow-up ($n=11$).

Next, we examined pretreatment changes in drinking outcomes among those who provided end-of-treatment data. Results indicated a significant increase in percent days abstinent [*difference score* = 18.96; $t(59) = 4.38$, $p < .001$] and significant decreases in drinks per drinking day [*difference score* = 5.56; $t(59) = 4.75$, $p < .001$] and percent heavy drinking days [*difference score* = 21.54; $t(59) = 4.05$, $p < .001$] during the pretreatment window (i.e., baseline to treatment session 1).

Finally, we examined therapist adherence to the ART treatment manual. Two independent raters trained in the use of the adherence measure by the first (P.S.) and last (G.G.) author provided ratings of each therapist across the 12 treatment sessions. Due to a high proportion of observed agreement between raters (e.g., $> .90$) the “kappa paradox” was encountered (i.e., observed proportion of agreement is high but the value of the kappa statistic is low; Feinstein & Cecchetti, 1990) and to base adherence on the value of kappa would have provided a misleading picture. Therefore, as adherence refers to the degree to which the therapist delivered the content of the treatment program as specified in the therapy manual (Cross & West, 2011), adherence was operationalized as the percent of the program content delivered. Across all 12 treatment sessions, an average of 87.5% of program was delivered (range 77.5–100) reflecting a high degree of adherence across sessions and therapists.

3.2. Drinking Outcomes

The primary drinking outcome for this study was percent days abstinent. However, because this is a Stage 1b pilot study, other drinking outcomes were also explored and the results reported below. To examine if those in ART had greater treatment gains on percent days abstinent and other drinking outcomes when compared to HLS, multilevel modeling (measures within person) was conducted with treatment condition as a level two moderator.

Percent days abstinent—Results indicated significant Treatment Condition X Time and Treatment Condition X Time² interactions for percent days abstinent (see Table 3 and top panel of Figure 2). Specifically, those in ART demonstrated significantly greater increases in percent days abstinent from baseline to end of treatment (i.e., Treatment Condition X Time effect) that began to slow and slightly decline during follow-up when compared to those in HLS (i.e., Treatment Condition X Time² effect). Follow-up analyses revealed that those who received ART did not significantly differ from those who received HLS at any of the time points. However, a moderate effect size was observed for ART at the 3-month follow-up ($b=14.84$, $p=.106$, Cohen’s $d=.43$). Finally, simple slopes analysis revealed a significant increase from baseline to end of treatment for those who received ART ($b=29.42$, $p<.001$, Cohen’s $d=1.90$), but not for those who received HLS.

Average drinks per drinking day—Significant Treatment Condition X Time and Treatment Condition X Time² interactions were observed for average drinks per drinking day (see Table 3 and middle panel of Figure 2) and indicate that those who received ART significantly reduced their drinks per drinking day from baseline through the 3-month follow-up when compared to those who received HLS. Follow-up analyses revealed that those who received ART did not significantly differ from those who received HLS at any of the time points. However, a moderate effect was observed for ART at the 3-month follow-up ($b=-1.37$, $p=.122$, Cohen’s $d=.41$). Finally, simple slopes analysis revealed a significant decrease from baseline to end of treatment for those who received ART ($b=-1.86$, $p=.042$, Cohen’s $d=.55$), but not for those received HLS.

Percent heavy drinking days—The Treatment Condition X Time and Treatment Condition X Time² interactions were not significant for percent heavy drinking days (see Table 3 and bottom panel of Figure 2). Follow-up analyses revealed that those who received ART did not significantly differ from those receiving HLS at any of the time points. However, a moderate effect size was observed for ART at the 3-month follow-up ($b = -14.08$, $p = .102$, Cohen's $d = .44$). Finally, simple slopes demonstrated a significant decrease from baseline to end of treatment for those who received ART ($b = -26.9$, $p = .001$, Cohen's $d = .89$), but not for those who received HLS.

3.3. Non-drinking Outcomes: Treatment Process Variables

A series of analyses were conducted examining non-drinking outcomes that potentially serve as important processes associated with reducing negative affect drinking. Measures included in these analyses were described above (see section 2.2) and included behavioral (e.g., coping strategies, drinking situations), affective (e.g., negative affect, anxiety and mood symptoms, affect regulation), and cognitive variables (e.g., self-efficacy). Results from these analyses revealed a statistically significant Treatment Condition X Time interaction for the KIMS-observing subscale only (see Table 4 for summary and top panel of Figure 3). Follow-up analyses revealed a significant difference between ART and HLS at end-of-treatment ($b = 6.11$, $p = .004$, Cohen's $d = .79$). No differences were noted at baseline. Furthermore, there was a significant increase from baseline to end of treatment for those who received ART ($b = 4.86$, $p = .004$, Cohen's $d = .78$), but not for those who received HLS.

Two additional variables displayed a moderate effect size for the Treatment Condition X Time interaction; the KIMS Describing subscale and the PANAS Negative Affect scale (see Table 4). While there were no significant between-group differences at baseline or end of treatment for either variable, simple slopes analyses revealed significant increases in describing and significant decreases in negative affect for those who received ART but not for those who received HLS (KIMS Describing, $b = 4.13$, $p < .001$, Cohen's $d = 1.12$; PANAS Negative Affect, $b = -5.10$, $p = .002$, Cohen's $d = .87$).

3.4. Client Satisfaction and Working Alliance Inventory

Three analyses examining average number of sessions attended, client satisfaction, and working alliance throughout treatment were conducted. Results indicated no differences between ART (9.7, $SD = 3.4$) and HLS (8.8, $SD = 4.2$) on number of sessions attended $F(1, 58) = .913$, $p = .343$, $\eta^2 = .015$ or on working alliance at sessions two, four, six, eight, ten, or twelve [F 's ranged from .27 to 1.23, p 's = .27 to .62]. With regard to client satisfaction, results indicated higher client satisfaction for ART (30.4, $SD = 2.5$) when compared to HLS (28.3, $SD = 3.7$), $F(1, 47) = 5.56$, $p = .023$, $\eta^2 = .11$.

4. Discussion

The current study reports on the development and evaluation of a novel treatment supplement for alcohol dependence designed to address the problem of negative affect drinking. Treatment manual development and the initial evaluation of the Affect Regulation Training (ART) intervention followed the stage model of behavioral therapies research (Rounsaville et al., 2001).

Study results provide promising support for ART. Specifically, the current study met all of the aims of a Stage 1b pilot trial as outlined by Rounsaville et al. (2001). That is, the current study demonstrated (a) excellent patient acceptance of ART (i.e., treatment retention and satisfaction, strong therapeutic alliance), (b) ability to recruit the target population, (c)

feasibility of treatment delivery with Master's level therapists in an outpatient setting, (d) clinically significant patient improvement in at least one important outcome domain, and (e) effect size estimates to be used to determine the sample size for a Stage II clinical trial.

The three drinking outcome analyses revealed small to moderate effect sizes across the end of treatment and the 3- and 6-month follow-up assessments. For percent days abstinent, drinks per drinking day, and percent heavy drinking days, those receiving ART had greater gains on these drinking outcomes from pre- to post-treatment. Moreover, for two of the measures (% days abstinent and % heavy drinking days), the gains were maintained at the 3- and 6-month follow-up assessments. Overall, results for drinking outcomes are encouraging and justify the need for a fully powered Stage II clinical trial as the next step in evaluating ART's efficacy.

For non-drinking outcomes, the Observing and Describing subscales of the Kentucky Inventory of Mindfulness and the Negative Affect scale of the Positive and Negative Affect Scale demonstrated changes in the range of a moderate effect size in favor of ART. While these three scales assess processes relevant to the purported theoretical mechanisms of ART (i.e., decrease negative affect, increase mindfulness), the significance of these findings must be weighed against the many non-significant results observed for numerous other treatment process measures, including measures of coping skills and emotion regulation. The majority of these analyses revealed significant time main effects but no significant treatment by time interactions indicating no differences between the ART and HLS groups at the end of treatment. Nevertheless, the three significant findings could be followed up in a future study investigating therapeutic change processes associated with the ART intervention.

Given that ART was designed as a treatment supplement for CBT for alcohol dependence, the control condition (CBT + HLS) chosen for the study presented a relatively strong test of ART's efficacy. A less stringent comparison would have been to contrast treatment as usual versus CBT + ART (see Rounsaville et al., 2001 for a discussion of Stage 1b options for control conditions). Thus, it was felt that initial efficacy testing of ART occurred under stringent conditions. As ART was shown to be efficacious under these conditions, future research might also examine the efficacy of ART in a more diverse patient population (Rounsaville et al., 2001). For example, ART could be expanded to all alcohol dependent men and women, not just those with a negative affect drinking profile. Approximately 50% of people that were screened for this study, and who met diagnostic criteria for alcohol dependence, *did not* meet the criteria for a negative affect drinking profile as defined in this study. However, the majority of them did report drinking in negative affect situations and ART may produce benefits for them as well.

Several limitations of this Stage 1b pilot study are worth noting. First, individuals who received the ART treatment supplement were hypothesized to show greater improvements on measures of negative affect, mindfulness and emotion regulation. While those who received ART reported significant within-group changes from baseline to end-of-treatment in negative affect (a reduction) and on the Describing subscale of the KIMS (an increase), the one variable for which we observed a significant treatment condition by time interaction was the Observing Scale of the KIMS mindfulness measure. Although the moderate effect sizes for changes in negative affect (.40) and Describing (.42) are encouraging, the limited number of significant results between the experimental and control condition on measures of emotion regulation creates some uncertainty as to how ART works. These results raise an interesting question: How does negative affect decrease significantly for those who received ART with few observable between group differences in emotion regulation skills? To address this question we first examined a recently proposed model of emotion regulation (Adaptive Coping with Emotions or ACE; Berking et al., 2011) and compared it to the

treatment strategies included in ART. According to Berking et al., effective emotion regulation may be conceptualized as the interplay of nine abilities that range from identifying and accepting negative affect to active behavioral approaches to manage negative affect (e.g., active modification of negative affect, confront distressing situations). Next, the extent to which ART covered these nine emotion regulation abilities was explored. With its inclusion of mindfulness and prolonged imaginal exposure to negative affect drinking situations, ART places greater emphasis on identification, awareness, and acceptance of negative emotions than it does on promoting more active behavioral methods of emotion regulation. Finally, the subscales of the affect regulation and mindfulness measures administered at baseline and end-of-treatment were examined for their coverage of the nine emotion regulation abilities identified by Berking et al. (2011). Upon examination, we ascertained that approximately 25% of all subscales were designed to assess constructs similar to those being cultivated in ART; the remaining 75% of the subscales assessed more active behavioral strategies such as cognitive reappraisal, seeking guidance, curbing impulse control problems, and active problem solving. To summarize, it appears that ART includes more treatment strategies that could be construed as mindful (i.e., being aware, observant, or accepting) and that our measures (albeit some of the best available when the study was conducted) assessed more active behavioral approaches for managing negative affect. In this way, the significant results obtained for the Observing and Describing subscales of the KIMS are consistent with the types of affect regulation strategies cultivated in ART.

Having dissected ART and the treatment process measures in this way, we turned to the mindfulness literature to answer the question of how ART, with its apparent greater emphasis on mindfulness-like strategies, may have produced a significant reduction in negative affect. With regard to negative affect reduction, mindfulness has been conceptualized as a behavioral exposure technique, similar to prolonged imaginal exposure, which has as an outcome desensitization or extinction of responses to negative emotional cues (e.g., Marlatt & Marques, 1977; Treanor, 2011). Therefore, ART, with its emphasis on mindfulness-based techniques and prolonged imaginal exposure, may be better equipped for negative affect reduction than it is for the development of more behaviorally active or goal-directed affect regulation strategies.¹ Consistent with the view that mindfulness is part exposure/extinction, Treanor (2011) invoked contemporary theories of learning to show how mindfulness may facilitate negative affect reduction via an exposure/extinction process. Applying one of Treanor's (2011) examples to the current study, it is possible that mindfulness may have cultivated greater attention and awareness in those who received ART and broadened awareness may have facilitated extinction learning through an increased awareness of negative emotional cues (such as those presented during sessions 7–10, prolonged exposure to negative emotional drinking scenes). This example converges with Stasiewicz and Maisto's (1993) description of the role of negative affect in the development and maintenance of substance use. In their model, they also promote exposure to negative emotional cues with goal of decreasing conditioned emotional responses and disrupting the connection between such responses and substance use behavior.

A second limitation is that the current study cannot identify which of ART's treatment sessions, or treatment content, are the more active components of ART. Although ART's emphasis on mindfulness and prolonged exposure may have contributed to the results obtained, future research directed at identifying essential and non-essential treatment components is needed. A better understanding of the treatment process might be achieved

¹In the ART intervention, 6 of 12 sessions were devoted to either mindfulness or prolonged exposure. In addition, although the mindfulness strategies were covered in sessions 3 and 4, mindfulness skills were encouraged daily (e.g., homework assignments) and were used to facilitate participants engagement in the prolonged exposure sessions to negative affect drinking situations (e.g., participants were instructed to really feel the emotions, remain in contact with them, and not to suppress or push them away).

with a larger sample and more frequent assessments of emotion regulation processes. For example, it is possible that the significant between-group changes reported on the Observing subscale of the KIMS occurred suddenly and in response to the mindfulness sessions (sessions 3 and 4) with no additional changes for the duration of treatment. In addition, such changes in mindful observing of one's thoughts and emotions could also be a necessary precondition for maximizing gains during the four imaginal exposure sessions and could account for the greater decreases in negative affect observed in those who received ART. More frequent assessments (i.e., weekly) would provide greater sensitivity and permit identification of when such changes occur during treatment.

Finally, issues of sample homogeneity and heterogeneity each pose a limitation. With regard to sample homogeneity, only those individuals who reported drinking most often in negative emotional situations were recruited into the study. As mentioned earlier, approximately 50% of alcohol dependent men and women screened for the study met the criterion for a negative affective drinking profile. Thus, generalizability of these results to a broader sample of individuals with alcohol dependence is limited. With regard to sample heterogeneity, restricting recruitment to only those with a negative affect drinking profile may have increased the number of participants enrolled in the study who had a co-occurring mood and/or anxiety disorder. A high rate of comorbidity (70.1% had at least one co-occurring mood/anxiety disorder) may have contributed to some of the null findings with regard to the affect regulation variables, presumably because these individuals are predisposed to difficulties with affect regulation. Alternatively, these individuals may have contributed to the positive results observed because ART was perceived as more relevant to their difficulties with negative affect. Unfortunately, in this Stage 1b pilot study, issues of statistical power and small cell sizes preclude a definitive answer as to the differential impact of ART for alcohol dependent men and women with a comorbid mood and anxiety disorder.

While we considered alternative recruitment strategies, such as recruiting only individuals with AD and a comorbid mood or anxiety disorder, we opted to recruit individuals based on a negative affect drinking profile because our main focus was on the functional relationship between alcohol consumption and the regulation of affect. While alcohol problem severity tends to be greater in comorbid samples (Bradizza, Stasiewicz & Pass, 2006), the presence of a discrete psychiatric disorder does not in itself provide information about a person's alcohol use pattern or reasons for use (e.g., negative affect). Future investigations of ART could examine whether ART, when added to CBT for alcohol dependence, results in better outcomes for comorbid individuals.

To summarize, negative affect has been found to be a frequent and consistently endorsed precipitant of alcohol use among individuals with an alcohol use disorder (Lowman et al., 2006). Findings from this Stage 1a/1b study indicate that supplementing CBT for alcohol dependence with an affect regulation training intervention significantly reduced drinking among an alcohol dependent sample that reported drinking heavily and often in negative emotional situations. Findings also support high levels of patient satisfaction with ART and high levels of therapist adherence to the treatment protocol. Contrary to expectations, individuals receiving the ART supplement demonstrated limited gains on measures of emotion regulation when compared to those receiving the HLS control treatment supplement. However, findings do support a significantly greater reduction in negative affect. Overall, results from this study support further investigation of ART with a Stage II randomized clinical trial to evaluate the efficacy of this treatment supplement in a larger sample where the mediating and moderating effects of multiple variables can be assessed.

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Figure 1. Participant flow Consolidated Standards of Reporting Trials (CONSORT) diagram. ART = Affect Regulation Training; HLS = Health & Lifestyle Supplement.

Figure 2.
Treatment Condition X Time Interactions for Drinking Outcomes.

Figure 3. Treatment Condition X Time interaction for KIMS-Observing subscale (top panel), KIMS-Describing subscale (middle panel), and PANAS Negative Affect (bottom panel).

Table 1

Summary of Treatment Content for ART and HLS

	Affect Regulation Training (ART)	Healthy and Lifestyle (HLS)
Session 1	Introduction to Treatment	Introduction to Treatment
Session 2	Negative Affect Monitoring	Negative Health Consequences of Heavy Alcohol Use
Session 3	Mindfulness Training to Improve Emotion Identification	Drinking and Driving
Session 4	Integrating Mindfulness and Experiencing Emotions	Personal Values and Priorities
Session 5	Cognitive and Behavioral Coping Skills for Managing Negative Affect	Monitoring Session
Session 6	Coping with Overwhelming Emotions	Role Identification
Session 7	Prolonged, Direct Experiencing of Negative Emotions: I	Reducing HIV Risk or Protecting your Health with HIV
Session 8	Prolonged, Direct Experiencing of Negative Emotions: II	Healthy Eating and Nutrition
Session 9	Prolonged, Direct Experiencing of Negative Emotions: III	Monitoring Session
Session 10	Prolonged, Direct Experiencing of Negative Emotions: IV	Starting/Maintaining an Exercise Program
Session 11	Enhancement of Positive Emotions	Screening for Breast Cancer (Women) or Colorectal Cancer (Men)
Session 12	Review and Termination	Review and Termination

Table 2
Raw Means (standard deviations) for those included in primary drinking outcome analyses

	Re-Positioned Baseline		End of Treatment		3-month Follow-up		6-month Follow-up	
	ART (n=32)	HLS (n=28)	ART (n=32)	HLS (n=28)	ART (n=28)	HLS (n=25)	ART (n=25)	HLS (n=24)
Percent Days Abstinent	43.72 (37.67)	51.76 (40.88)	74.11 (33.93)	58.92 (39.44)	67.03 (34.42)	57.24 (34.99)	67.85 (33.61)	57.20 (37.40)
Drinks per Drinking Day	5.02 (3.96)	3.57 (3.35)	2.81 (3.55)	4.31 (4.48)	4.63 (3.99)	6.21 (6.96)	4.58 (3.38)	4.44 (3.06)
Percent Days Heavy Drinking	45.79 (39.12)	40.76 (42.57)	18.81 (29.27)	32.91 (41.76)	23.78 (30.72)	31.95 (35.02)	21.72 (26.92)	32.81 (33.82)

Table 3

Summary of results for drinking outcomes (Multilevel Analysis)

	% Days Abstinent				Drinks/Drinking Day				% Heavy Drinking Days			
	<i>b</i>	<i>SE</i>	<i>p</i>	<i>ES</i>	<i>b</i>	<i>SE</i>	<i>p</i>	<i>ES</i>	<i>b</i>	<i>SE</i>	<i>p</i>	<i>ES</i>
Intercept	52.11	7.53	<.001	1.82	3.50	.62	<.001	1.46	40.68	7.96	<.001	1.34
Intercept X Treatment	-6.28	9.82	.525	.17	1.30	.93	.164	.37	3.50	10.30	.735	.09
Time (linear)	7.52	6.36	.242	.31	1.20	.80	.136	.40	-9.68	7.51	.203	.34
Time X Treatment	21.90	9.36	.023	.62	-3.06	1.19	.013	.67	-17.22	10.93	.121	.41
Time ² (quadratic)	-1.75	1.89	.359	.24	-.28	.23	.224	.32	2.16	2.20	.330	.26
Time ² X Treatment	-5.67	2.72	.042	.55	.86	.35	.017	.65	4.22	3.11	.181	.36

Note: *b* = unstandardized estimate; *SE*= standard error; *p* = p-value; *ES*= estimated effect size (Cohen's *d*).

Treatment = Treatment Condition (HLS=0, ART=1).

Table 4
Summary Estimated Means for Non-Drinking Treatment Outcomes (Multilevel analysis)

	ART (n=32)		HLS (n=28)		Treatment Condition X Time Interaction		
	Pre	Post	Pre	Post	b	p	ES
PANAS NA	18.50	13.40	17.43	15.29	-2.96	.134	.40
ASI	27.44	22.35	25.57	21.03	-.55	.828	.06
BSI							
Depression	1.42	.86	1.32	.79	-.04	.864	.05
Anxiety	1.08	.71	.96	.64	-.05	.784	.07
BAI	14.34	7.52	15.29	9.16	-.70	.761	.08
MAS Total	107.54	96.54	101.75	91.28	-.53	.905	.03
IDTS - Alcohol							
Unpleasant Emotions	67.92	62.70	72.50	58.71	8.57	.176	.36
Conflict with Others	46.67	46.80	47.62	39.69	8.06	.267	.29
DTCQ-Alcohol							
Unpleasant Emotions	40.38	68.21	33.48	66.12	-4.81	.564	.15
Conflict with Others	57.56	79.32	53.21	78.65	-3.68	.616	.13
AASE	54.91	79.25	51.50	74.14	1.70	.749	.08
KIMS							
Observing	37.19	42.04	36.00	35.93	4.93	.022	.62
Describing	25.25	29.38	27.07	28.96	2.24	.114	.42
Acting	30.28	32.19	30.82	32.96	-.23	.865	.04
Accepting	25.22	29.12	28.54	30.94	1.50	.385	.23
DEERS							
Non-Acceptance	15.88	12.64	13.13	11.49	-1.60	.343	.25
Goal	15.41	13.96	13.75	11.60	.71	.451	.20
Impulse	12.39	10.68	11.32	8.81	.81	.535	.16
Strategy	21.67	18.24	19.37	15.86	.08	.944	.02
Awareness	14.40	12.67	15.21	13.13	.35	.749	.08
Clarity	11.44	9.35	11.32	9.12	.12	.904	.03
MAAS	3.75	4.26	4.13	4.63	.00	.986	.00

	ART (<i>n</i> =32)		HLS (<i>n</i> =28)		Treatment Condition X Time Interaction		
	Pre	Post	Pre	Post	<i>b</i>	<i>p</i>	<i>ES</i>
ERQ							
Suppression	15.16	12.84	14.61	12.65	-.37	.790	.07
Reappraisal	26.81	31.50	27.50	29.75	2.44	.242	.31
NMRQ	97.19	110.65	94.75	108.16	.05	.991	.00
DTS							
Tolerance	2.77	3.07	3.21	3.61	-.09	.754	.08
Absorption	2.85	3.15	3.11	3.60	-.20	.472	.19
Appraisal	3.00	3.49	3.37	3.78	.08	.742	.09
Regulation	2.76	3.25	3.08	3.51	.06	.810	.06
CRI							
Approach	68.41	72.84	68.79	71.76	1.46	.706	.10
Avoidance	58.94	53.20	56.14	52.37	-1.97	.542	.16

Note: PANAS NA= Positive and Negative Affect Schedule – Negative Affect subscale; ASI=Anxiety Sensitivity Index; BSI=Brief Symptom Inventory; BAI=Beck Anxiety Inventory; MAS=Multidimensional Anger Scale; IDTS-Alcohol=Inventory of Drug Taking Situations –Alcohol version; DTCQ= Drug Taking Confidence Questionnaire – Alcohol Version; AASE=Alcohol Abstinence Self-Efficacy; KIMS=Kentucky Inventory of Mindfulness Skills; DERS= Difficulties in Emotion Regulation Scale; MAAS=Mindful Attention Awareness Scale; ERQ=Emotion Regulation Questionnaire; NMRQ= Negative Mood Regulation Expectancies Questionnaire; DTS = Distress Tolerance Scale CRI = Coping Response Inventory.