

## TREATING INPATIENTS WITH COMORBID DEPRESSION AND ALCOHOL USE DISORDERS: A COMPARISON OF ACCEPTANCE AND COMMITMENT THERAPY VERSUS TREATMENT AS USUAL

Connie L. Petersen and Robert D. Zettle

Wichita State University

*Inpatients involuntarily committed to a chemical dependency unit and exhibiting a co-occurring depressive disorder received either individual sessions of acceptance and commitment therapy (ACT) or treatment as usual (TAU) within the context of an ongoing 12-step program. Results indicated significant, but equivalent, reductions in levels of depression for both treatment conditions. However, participants randomly assigned to receive ACT (n = 12) required a shorter treatment phase and smaller dose of individual therapy to meet criteria for discharge compared to their TAU counterparts (n = 12). As expected, an analysis of the therapeutic process suggested that a differential reduction in levels of experiential avoidance associated with ACT may have contributed to its apparent relatively greater therapeutic impact. Limitations of the study, as well as its possible implications for the treatment of comorbid depression and alcohol use disorders in particular, and of co-occurring presenting clinical problems in general, are discussed.*

Keywords: acceptance and commitment therapy, comorbid disorders, human adults, substance use, depression, experiential avoidance, alcohol abuse

Psychiatric comorbidity, or the concurrent clinical presentation of two or more diagnosable behavioral disorders, is the rule rather than the exception (First, 2005). Epidemiological research has found that 45% of those who warrant at least one diagnosis also meet the criteria for one or more additional disorders (Kessler, Chiu, Demler, & Walters, 2005). Mood and substance use disorders, in particular, have been found to frequently co-occur. According to the Epidemiologic Catchment Area (ECA) Study, the lifetime prevalence rate for any mood disorder and any alcohol use disorder is 21.8%. For major depression and dysthymic disorder, the comparable comorbidity rates with any alcohol use disorders are 16.5% and 20.9%, respectively (Regier et al.,

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Connie L. Petersen is now at Behavioral Health Specialists, Inc., in Norfolk, NE.

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Correspondence concerning this article should be addressed to Robert D. Zettle, Department of Psychology, Wichita State University, Wichita, KS 67208. E-mail: robert.zettle@wichita.edu

1990). Among those with an existing alcohol-related disorder, as many as 30–48% of women and 9–24% of men will also meet the diagnostic criteria for major depressive disorder at some point during their lifetime (Kessler, Crum, Warner, Nelson, Schulenberg, & Anthony, 1997).

Not surprisingly, high rates of comorbidity between depressive and alcohol use disorders have also been reported in clinical as well as community samples. According to research conducted with both outpatient and inpatient mental health and substance abuse treatment services, major depression was the most prevalent Axis I diagnosis (60%), and alcohol was the most frequent substance of abuse (47%; Judd, Thomas, Schwartz, Outcalt, & Hough, 2003). When prevalence rates are combined, the most common pair of problems presented by clients would be expected to be unipolar depression and an alcohol use disorder.

Comorbidity in general presents a challenge to mental health professionals. The particular challenges faced by therapists in providing efficacious services for clients struggling with both depression and alcohol-related disorders appear to be especially daunting for several reasons. Mental health and substance abuse professionals are typically trained to deal with one of the disorders (depression and alcohol abuse/dependence, respectively), but not both (Daley & Moss, 2002; Drake et al., 2001). Moreover, state and federal funding sources typically pay for either mental illness or chemical dependency treatment, but not both simultaneously (McNeece & DiNitto, 2005), leading to what Kessler, Nelson, McGonagle, Edlund, Frank, and Leaf (1996) have referred to as an “artificial separation” among the clinical services received by those who struggle with both depressive and alcohol use disorders.

Of the three possible treatment models available for targeting comorbid conditions, sequential and parallel approaches have been pursued more often than an integrative one (Mueser, Noordsy, Drake, & Fox, 2003). Within the sequential model, treatment for a co-occurring presenting problem is delayed until the “primary” diagnosed disorder is first resolved or suitably stabilized. The parallel treatment model addresses co-occurring disorders at the same time, but at the cost of fractionating services. Simultaneous treatment of the concurrent disorders within this model is often provided by different professionals, who may even work for different agencies, thereby limiting communication and a coordination of client services (Kavanagh et al., 2000). Not surprisingly, existing research suggests that the sequential and parallel models are equally inefficacious (Drake, Mueser, Clark, & Wallach, 1996; Havassy, Shopshire, & Quigley, 2000) and marked by high costs of service utilization (Bartels, Teague, Drake, Clark, Bush, & Noordsy, 1993).

The few studies that have directly compared an integrated treatment approach against the sequential and parallel models for providing services for severely mentally ill substance abusers have been promising (Drake, Bartels, Teague, Noordsy, & Clark, 1993; Drake, Mercer-McFadden, Mueser, McHugo, & Bond, 1998; RachBeisel, Scott, & Dixon, 1999). However, they also have been lacking in sufficient experimental rigor. Additionally, none of the previous investigations have focused specifically on the treatment of concurrent depressive and alcohol use disorders. The purpose of this study was to extend earlier research by undertaking a preliminary evaluation of the relative impact of acceptance and commitment therapy (ACT; Hayes, Strosahl, & Wilson, 1999) as an integrative approach for treating inpatients specifically struggling with both depression and alcohol-related problems.

Within the context of an established 12-step program (Owen, 2000), ACT was compared against treatment as usual (TAU) using an experimental design that sought to ensure an adequate level of internal validity while also remaining sensitive to ecological demands and concerns about the generalizability of the findings.

ACT was selected as the integrative approach to be evaluated within this study for several reasons. For one, ACT has shown promise in alleviating both depression and substance abuse/dependence problems. More specifically, comparisons of ACT to cognitive therapy (Beck, Rush, Shaw, & Emery, 1979) in alleviating depression have been favorable when delivered in either individual (Zettle & Hayes, 1986) or group formats (Zettle & Rains, 1989). Perhaps even more importantly, the clinical gains apparently develop through a distinct and theoretically consistent process (Hayes, Luoma, Bond, Masuda, & Lillis, 2006; Zettle, Rains, & Hayes, in press). While we are only aware of one case study in which ACT was evaluated in treating alcohol dependence (Heffner, Eifert, Parker, Hernandez, & Sperry, 2003), other related research has documented its impact in reducing the use of opiates and other abused substances (Bissett, 2002; Hayes, Wilson, et al., 2004) and nicotine dependence (Gifford, 2002; Gifford et al., 2004; Wilson & Byrd, 2004). Hayes, Wilson, et al. (2004) found that adding ACT to methadone maintenance led to greater reductions in opiate and total drug use compared to methadone maintenance alone, and Gifford et al. (2004) reported that ACT resulted in better long-term smoking outcomes than nicotine replacement therapy.

Another empirical reason for choosing ACT as the integrative approach for investigation in this project comes from another case study in which significant improvement was noted in applying it to the treatment of comorbid substance abuse and posttraumatic stress disorder (Batten & Hayes, 2005). A final reason for the selection of ACT as the integrative approach "of choice" was more conceptual in nature. As a transdiagnostic approach, ACT has been conceptualized to weaken experiential avoidance as a common pathogenic process that may underlie various forms of both clinical and subclinical levels of human suffering (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). From this perspective, although depression and alcohol use disorders may have distinct topographical features and clearly differ from each other in their formal diagnostic signs and symptoms, they may both arise from unsuccessful efforts to control unwanted psychological events. For example, clinical depression is regarded as a secondary emotion that emerges in reaction to unsuccessful attempts to eliminate or otherwise control unwanted feelings and mood states such as sadness, guilt, or regret (Zettle, 2007). The abuse of alcohol and other substances may represent additional ways of avoiding or escaping from unpleasant private events (Wilson & Byrd, 2004). To the extent that both depression and alcohol use disorders serve the same experiential avoidant function, an approach such as ACT that targets this common pathogenic process would be expected to be particularly efficacious when delivered to clients concurrently displaying both.

It was thus generally predicted that inpatients would experience greater therapeutic benefits from supplementing a 12-step program for chemical dependency with individual sessions of ACT than with TAU. Because the length of time that clients remained in the program was dependent upon how much progress they made during their participation in it, it was expected

that the relatively greater benefits associated with ACT might be reflected not only in significantly greater reductions in symptomatic measures of depression, but also by less treatment being required before meeting discharge requirements. Consistent with a trials-to-criterion design, it was anticipated that participants receiving ACT would require a smaller dose of treatment to meet requirements for discharge from the program. Process research within ACT has documented reductions in experiential avoidance and related measures when ACT has been successfully applied to treatment of depression in particular (Zettle & Hayes, 1986) and abnormal behavior more broadly (Hayes et al., 2006). Accordingly, it was also expected that any differential therapeutic benefits attributable to ACT would also be accompanied by commensurate reductions in levels of experiential avoidance.

## Method

### *Participants*

Participants were recruited sequentially over a 5-month period from individuals involuntarily committed to a chemical dependency unit within a southern state hospital. A total of 29 individuals admitted for treatment of an alcohol use disorder, who were also diagnosed by medical staff upon admission as exhibiting a depressive disorder, were referred and evaluated as possible participants. A pretreatment assessment was completed on each participant within 11 days of their referral in which the following inclusion criteria were evaluated: (a) presence of a unipolar depressive disorder as defined by the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV; American Psychiatric Association, 1994); (b) presence of alcohol abuse, alcohol dependence, or polysubstance dependence with alcohol being a substance of issue according to DSM-IV criteria; and (c) capacity to provide informed consent and complete a questionnaire battery. All referrals met these requirements as well as exclusion criteria that they not be diagnosable with substance-induced depression nor exhibit signs of intoxication at any time during the project's assessment or treatment phases. All participants were treated in accordance with the "Ethical Principles of Psychologists and Code of Conduct" (American Psychological Association, 2002).

A total of 5 individuals withdrew at various points throughout the study. One participant withdrew following the pretreatment evaluation but before the beginning of the treatment phase; 2 (one each from TAU and ACT) were administratively discharged from the hospital for severe rule violations and relocated to other facilities; and 2 participants withdrew following one session of ACT. The demographic and background characteristics of the 24 participants who completed all phases of the project are provided in Table 1 according to the type of individual therapy condition (TAU vs. ACT) to which they were randomly assigned. A series of Fisher exact probability tests, chi-square analyses, and *t* tests detected no significant differences between participants in the two treatment groups on any of these demographic or background variables. The prototypical participant was unmarried, under the age of 40, with a high school education, and with a previous history of psychiatric and/or substance abuse treatment. Diagnostically, the most common combination

of depressive and alcohol use disorders was depressive disorder not otherwise specified and alcohol dependence (TAU:  $n = 6$ ; ACT:  $n = 7$ ).

Table 1  
*Participant Demographic and Background Information*

Variable	TAU ( $n = 12$ )	ACT ( $n = 12$ )
Age	38.9 (7.8) <sup>a</sup>	36.7 (11.5)
Gender	7 female, 5 male	5 female, 7 male
Race <sup>b</sup>	4 AA, 7 C, 1 NA	4 AA, 8 C
Marital status	3 married, 9 single <sup>c</sup>	1 married, 11 single
Education <sup>d</sup>	11.8 (2.0)	11.9 (2.7)
Diagnostic status		
Alcohol use	4 abuse, 8 dependence	5 abuse, 7 dependence
Depression <sup>e</sup>	1 DD, 1 MDD, 10 NOS	2 MDD, 10 NOS
Past psychiatric treatment <sup>f</sup>		
Inpatient	6 (1.5)	3 (1.0)
Outpatient	1 (1)	1 (1)
None	5	8
Past substance treatment <sup>g</sup>		
Inpatient	10 (4.1)	8 (1.9)
None	2	4
Suicidal history <sup>h</sup>	3 (2.7)	4 (1.3)
Medication history <sup>i</sup>	2	2

<sup>a</sup> Parenthetical data are standard deviations. <sup>b</sup> AA = African-American, C = Caucasian, NA = Native American. <sup>c</sup> Single includes never married, separated, divorced, and widowed. <sup>d</sup> Nonparenthetical data are years of schooling; parenthetical data are standard deviations. <sup>e</sup> DD = dysthymic disorder; MDD = major depressive disorder; NOS = depressive disorder not otherwise specified. <sup>f</sup> Nonparenthetical data are number of participants with a history of that type of psychiatric treatment; parenthetical data are mean number of treatment episodes per participant. <sup>g</sup> Nonparenthetical data are number of participants with a history of that type of substance abuse treatment; parenthetical data are mean number of treatment episodes per participant. <sup>h</sup> Nonparenthetical data are number of participants who had attempted suicide; parenthetical data are mean number of attempts. <sup>i</sup> Number of participants with previous antidepressant therapy.

### Measures

Three sets of measures obtained at various points over the course of the study included (a) depression outcome measures at both pretreatment and posttreatment, (b) a process measure of experiential avoidance at both measurement occasions, and (c) treatment dosage measures.

*Depression outcome measures.* Levels of depression were evaluated at pretreatment and posttreatment with both interviewer-rated and self-report measures. The 21-item version of the Hamilton Rating Scale (HRS; Hamilton, 1960; Hedlund & Vieweg, 1979) was used to obtain an independent evaluation of depression level for each participant. Assessors blind to participant treatment

assignment followed a semistructured interview format by Williams (1988) in completing the HRS. Each administration of the HRS at both pretreatment and posttreatment was audiotaped, with a reliability analysis subsequently performed on half of the tapes ( $n = 24$ ). Significant agreement between an independent second evaluator and the original interviewers on HRS scores was obtained at both pretreatment ( $r = .80$ ;  $p < .01$ ) and posttreatment ( $r = .84$ ,  $p < .01$ ). Analyses of internal consistency performed on pretreatment and posttreatment HRS items yielded satisfactory alpha coefficients (.71 and .88, respectively), comparable to those reported by other researchers (Bagby, Ryder, Schuller, & Marshall, 2004).

The Beck Depression Inventory–Second Edition (BDI-II; Beck, Steer, & Brown, 1996) was administered at both assessment occasions as a self-report measure of depression. Previous research has documented the sound psychometric properties of the BDI-II, including its internal consistency with clinical populations (Beck et al.; Steer, Rissmiller, & Beck, 2000) and test-retest reliability (Beck et al.).

*Process measure of experiential avoidance.* The Acceptance and Action Questionnaire (AAQ; Hayes, Strosahl, et al., 2004) was administered as a process measure at both pretreatment and posttreatment. The AAQ consists of 9 items rated on a 7-point scale, with higher scores reflecting increased levels of experiential avoidance. Experiential avoidance is conceptualized as deliberate conscious efforts to alter the frequency or form of selective private events, such as unwanted thoughts, emotions, memories, images, and bodily sensations, and/or the contexts in which they occur (Hayes et al., 1996). Within the conceptual model upon which it is based, ACT is viewed as a strategic approach for weakening experiential avoidance as a central pathogenic process. Accordingly, the AAQ has been widely used as a process measure in evaluating the mechanisms of action within ACT (Hayes et al., 2006). Its level of internal consistency has been shown to be adequate for this purpose, and significant correlations with general as well as more specific measures of psychopathology attest to its validity (Hayes, Strosahl, et al.). Consistent with these findings, pretreatment AAQ scores from participants in this study correlated significantly and positively with both depression measures as well as percentage of drinking days, but not with number of drinks consumed per drinking episode.

*Treatment dosage measures.* Several variables were tracked as participants moved through the program to document their exposure to treatment. These measures for each participant included the duration of the treatment phase as well as the number of individual therapy sessions and hours of individual therapy received during treatment.

### *Treatment Conditions*

Participants received differing sessions of individual therapy (TAU vs. ACT), depending upon the condition to which they were randomly assigned, as well as services and interventions common to all inpatients.

*Common therapeutic interventions.* Consistent with a prevailing 12-step approach, participants received common services provided to all inpatients admitted to the hospital's chemical dependency unit. All participants were prescribed antidepressant medication that was administered individually at a nurse's station in order to monitor compliance. The specific medications and

dosage levels did not differ across the two treatment conditions. Participants also attended at least 5 hrs per week of group therapy and nightly Alcoholics Anonymous meetings (Alcoholics Anonymous World Services, 1976; World Service Office, 1988). Psychoeducational and medically related groups and lectures were provided to promote health-related behaviors, foster personal growth, and strengthen coping and social skills. Finally, all participants also attended four seminar/study groups per week to learn about the recovery process and relapse prevention.

*TAU.* Participants randomly assigned to this individual therapy condition received sessions conducted by staff drug and alcohol counselors according to schedule availability. These therapists were instructed to provide the type of approach they deemed appropriate for participants based upon their presenting issues. Although the dose of individual therapy received by each participant was monitored, the specific issues addressed within the sessions were not. However, given that the prevailing 12-step philosophy of the chemical dependency unit was also the preferred approach of most substance abuse counselors, the primary therapeutic goal of TAU sessions was presumably abstinence from alcohol rather than alleviation of comorbid depression.

*ACT.* Participants within this condition were scheduled to receive 30-min sessions that simultaneously addressed both depressive and alcohol-related issues on a biweekly basis for the duration of the treatment phase. All sessions were conducted by the first author according to a treatment protocol based on the ACT book of Hayes et al. (1999) that incorporated metaphors and exercises designed to promote defusion and acceptance of troubling private events, mindfulness, and value-directed overt behavioral change.<sup>1</sup> To monitor treatment integrity, a random sample of the total number of ACT sessions conducted (24 of 62) was audiotaped. Half of these sessions were subsequently reviewed and judged by a staff psychologist knowledgeable in ACT to correspond adequately with the treatment manual (i.e., mean rating of 8.2 on a 10-point Likert scale).

### *Procedure*

All of the participants who completed the program progressed through pretreatment, treatment, and posttreatment phases.

*Pretreatment assessment.* As mentioned previously, a pretreatment assessment was conducted within 11 days of the referral of newly admitted patients to the chemical dependency unit. The mean length of time from admission to completion of the pretreatment assessment phase did not differ between the two treatment conditions (TAU:  $M = 5.67$ ,  $SD = 2.33$ ; ACT:  $M = 6.00$ ,  $SD = 2.70$ ). In addition to the HRS, BDI-II, and AAQ, all participants were also administered two measures to further ensure equivalence between the two treatment groups in their levels of alcohol use and related consequences.

The Alcohol Timeline Followback interview (Alcohol TFLB; Sobell & Sobell, 1992) was administered to assess the alcohol use of each participant during the 3 months prior to treatment. A calendar and other memory aids were used to gather retrospective estimates of previous alcohol consumption. The Alcohol TFLB has been shown to have good psychometric properties, with most test-retest reliabilities exceeding .85 (Sobell & Sobell, 2000). TAU (54%)

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1 A copy of the treatment manual is available by contacting the second author.

and ACT (52%) participants reported drinking during half of the 90 days that preceded treatment and consuming an equivalent number of drinks when they did so (12.9 vs. 11.1, respectively).

The Problems Assessment for Substance-Using Psychiatric Patients (PASUPP; Carey, Roberts, Kivlahan, Carey, & Neal, 2004) was specifically designed for use with dually diagnosed populations as a self-report measure of the negative psychosocial impact of substance use. Specifically, respondents are asked to indicate whether they have experienced any of 50 related consequences across two time intervals (lifetime and past 3 months), thereby yielding two scores. Previous research has documented adequate item-total correlations and levels of internal consistency of the PASUPP to support its use in research (Carey et al.). An analysis of PASUPP data from this study obtained an alpha coefficient of .94. No differences were obtained between the two treatment groups in the negative consequences of alcohol abuse at either the 3-month (TAU:  $M = 82.08$ ,  $SD = 31.12$ ; ACT:  $M = 73.08$ ,  $SD = 21.96$ ) or lifetime intervals (TAU:  $M = 41.58$ ,  $SD = 6.37$ ; ACT:  $M = 36.00$ ,  $SD = 9.10$ ), suggesting further pretreatment equivalence between participants who subsequently received TAU or ACT.

*Treatment phase.* Following completion of the pretreatment assessment, participants began receiving individual sessions of the therapeutic approach (TAU vs. ACT) to which they had been randomly assigned. The number of days that elapsed from the time of the pretreatment assessment to the presentation of the first session did not differ between the two treatment conditions. TAU sessions lasted an hour, whereas ACT sessions were scheduled for 30 min but occasionally ran as long as an hour. For this reason, the total hours of therapy received by each participant were tracked during the treatment phase, as well as the number of sessions.

The treatment phase continued until the treatment team and medical staff determined that a participant had met criteria for discharge, at which point the posttreatment assessment was scheduled. Ultimately, the medical staff made the decision to discharge all patients admitted to the chemical dependency unit, including those who served as participants, based on the fact that they were deemed to no longer constitute a danger to self or others due to psychiatric and/or substance-related issues. The decision of the medical staff, in turn, was informed by weekly team meetings in which the progress of each patient was reviewed. Treatment team members included the first author, who provided all ACT sessions; TAU counselors; physicians; the clinical psychology supervisor; nurses and nurse practitioners; and direct care staff, as well as other facility personnel with whom patients had ongoing contact. Because both ACT and TAU providers also served as case managers for all patients assigned to them, including those outside the study, the medical staff was not aware of whether a given patient was a participant, nor his or her treatment condition status, based upon the assignment of the case manager alone.

*Posttreatment assessment.* The posttreatment assessment consisted of a readministration of the HRS, BDI-II, and AAQ by an independent evaluator not affiliated with the chemical dependency unit and blind to the treatment status of participants. Evaluations were completed following the last individual therapy session and on average within a week of a participant's discharge from the hospital. The time that elapsed from the posttreatment evaluation until discharge did not differ between the two treatment conditions.

## Results

Depression outcome (HRS and BDI-II) and process measures from the two assessment occasions are presented in Table 2. Because analyses of pretreatment data revealed no significant differences between the two treatment groups, all three measures were evaluated with  $2 \times 2$  [Time (pre vs. post)  $\times$  Group (TAU vs. ACT)] analyses of variance (ANOVA). The results of these ANOVAs are summarized in Table 2.

**Table 2**  
*Depression Outcome and Process Measures by Treatment Condition*

Measure	TAU		ACT		ANOVA <sup>a</sup>
	Pre	Post	Pre	Post	
HRS	27.7 (5.9) <sup>b</sup>	11.3 (7.6)	22.1 (8.9)	9.6 (9.4)	Time
BDI-II	30.1 (9.2)	15.2 (11.5)	22.5 (12.3)	8.0 (10.4)	Time
AAQ	45.5 (6.3)	44.1 (5.7)	44.8 (5.1)	34.4 (10.6)	Time, Group Time $\times$ Group

*Note.* HRS = Hamilton Rating Scale (Hamilton, 1960); BDI-2 = Beck Depression Inventory-Second Edition (Beck et al., 1996); AAQ = Acceptance and Action Questionnaire (Hayes, Strosahl, et al., 2004).

<sup>a</sup> Significant ANOVA effects: Time = assessment occasion, Group = TAU vs. ACT.

<sup>b</sup> Parenthetical data are standard deviations.

### *Depression Outcome Measures*

ANOVAs indicated significant main effects for time for both the HRS,  $F(1, 22) = 139.11$ ,  $p < .01$ ,  $\eta_p^2 = .86$ , and BDI-II,  $F(1, 22) = 55.51$ ,  $p < .01$ ,  $\eta_p^2 = .72$ . There were no main effects for group or interaction effects for Time  $\times$  Group for either depression measure. In effect, participants in both treatment conditions showed equivalent reductions in levels of depression as assessed by an independent evaluator as well as self-report. Suggestions by Dunlop, Cortina, Vaslow, and Burke (1996) were followed in determining large effect sizes (Cohen, 1988) for pretreatment to posttreatment improvement in both measures within each treatment condition (TAU: HRS  $d = 2.43$ , BDI-II  $d = 1.44$ ; ACT: HRS  $d = 1.37$ , BDI-II  $d = 1.28$ ).

### *Process Measure*

Significant main effects for time,  $F(1, 22) = 9.40$ ,  $p < .01$ ,  $\eta_p^2 = .30$ , group,  $F(1, 22) = 5.36$ ,  $p = .03$ ,  $\eta_p^2 = .20$ , and their interaction,  $F(1, 22) = 5.36$ ,  $p = .03$ ,  $\eta_p^2 = .20$ , were obtained for the AAQ. A further analysis of the interactive effect indicated that a statistically significant reduction in AAQ scores was noted only for those participants who received ACT,  $t(11) = 3.19$ ,  $p < .01$ ,  $d = 1.32$ . To further investigate the role of diminished levels of experiential avoidance as a possible therapeutic process, separate correlations were calculated among HRS, BDI-II, and AAQ change scores for the two treatment conditions. No significant relationships were noted for the TAU group between change on the AAQ and the two depression measures (HRS:  $r = .02$ , BDI-II:  $r = .07$ ). However, reductions in AAQ scores were significantly correlated with improvement on the HRS ( $r = .57$ ,  $p = .05$ ), but not the BDI-II ( $r = .32$ ,  $p = .31$ ), for participants treated with ACT.

### Treatment Dosage Measures

As can be seen in Table 3, the length of the treatment phase for ACT participants was only 68% of that for the TAU group (22.7 versus 33.3 days), a large ( $d = .97$ ) and statistically significant ( $p = .02$ ) difference. While the total number of therapy sessions did not differ between the two conditions, the total amount of staff treatment time was significantly less for the ACT group. Because ACT sessions were 30 min long versus 60 min for TAU, participants received 3.1 hr of ACT compared to 4.3 hr of TAU, another large ( $d = .95$ ) and statistically significant ( $p = .02$ ) difference.

Table 3  
Treatment Dosage Measures by Treatment Condition

Measure	TAU		ACT		$d$	$t$	$p$
	$M$	$SD$	$M$	$SD$			
Treatment length <sup>a</sup>	33.3	12.3	22.7	6.0	.97	2.71	.02
Number of sessions	4.3	1.6	5.2	.6	.73	1.74	.10
Hours of therapy	4.3	1.6	3.1	.3	.95	2.64	.02

<sup>a</sup>Length of treatment phase in days.

The finding that ACT participants met discharge criteria sooner than their TAU counterparts despite receiving less treatment was not due to them receiving a more concentrated dosage of therapy. To rule out this possibility, the amount of therapy received by TAU participants during their first 23 days of treatment was compared to that provided to those in the ACT condition. Three TAU participants each received one additional hourly session of individual therapy beyond the average length of time necessary to complete the treatment phase for those receiving ACT. Even with this adjustment, ACT participants still spent significantly less time in individual therapy ( $M = 3.1$  hr) than did those in the TAU group ( $M = 4.1$  hr). Thus, the failure of TAU participants to be discharged as quickly as their ACT counterparts does not appear to be attributable to a significant portion of individual therapy being withheld until near the end of the TAU treatment phase and after the average ACT participants had already discontinued treatment.

### Discussion

The overall findings of this study in part matched expectations. Because of ACT's status as a transdiagnostic approach and its demonstrated efficacy in impacting both depression (Zettle & Hayes, 1986; Zettle & Rains, 1989) and substance abuse (Hayes, Wilson, et al., 2004), greater therapeutic benefits were expected for those participants who received ACT. However, contrary to what had been anticipated, greater reductions in depression were not evident among participants who received individual sessions of ACT versus TAU. This was true for both interviewer-rated and self-reported levels of depression. In retrospect, these findings do not seem that unusual given that participants in both treatment conditions continued in therapy until they met the same discharge criteria. From this perspective, the significant but equivalent reductions in depressive symptoms attained across the two therapy conditions can be viewed as verification that the treatment phases within both continued until a comparable level of improvement was attained.

Moreover, the fact that similar symptomatic relief was achieved for both TAU and ACT supports the integrity of the treatment dosage measures and allows an interpretation of them to be understood with added confidence.

Significant differences among the treatment dosage measures were as anticipated. More specifically, participants receiving ACT met the criteria for discharge within a shorter period of time and with less time spent in individual therapy within the treatment phase. Apart from the statistical significance of these findings are their practical and clinical implications. Assuming that likelihood of relapse is not increased in the process, having clients spend as little time in the hospital and returning them to their natural environment as soon as possible would appear to maximize long-term treatment gains. Unfortunately, for practical as well as ethical reasons, it was not possible to track the status of participants once they were discharged from the hospital. Consequently, whether or not both treatment conditions maintained their reductions in level of depression posthospitalization remains an unanswered question to be addressed by further research. Because this study occurred in an inpatient setting and alcohol consumption as well as the consequences of continued drinking were not evaluated as dependent variables, additional investigations in this area could also be improved by including such measures as part of any follow-up evaluation.

The clinical significance of differences among the treatment dosage measures in favor of ACT is further underscored by financial considerations. The daily cost of treating inpatients admitted to the chemical dependency unit was approximately \$100. The difference in the length of treatment between the two therapeutic conditions thus constituted a savings of roughly \$1,000 for each participant who received ACT and of approximately \$12,000 in the aggregate. This relative advantage in cost-effectiveness associated with ACT is, however, predicated on the assumption that participants in each condition continued to receive services until similar discharge criteria were met.

The equivalent reductions in the depression measures across the two therapy conditions suggests that the significantly shorter treatment phase for ACT participants cannot be attributed to a premature termination of therapy. Because the posttreatment assessment was not scheduled until the medical staff cleared participants for discharge, data from it were not used in such deliberations. Consequently, concerns might be raised about whether the decision to discharge participants, and thus terminate the treatment phase, was made in an unbiased fashion.

The possibility that the medical staff may have applied more liberal criteria in determining whether ACT participants were ready for discharge cannot be completely ruled out, although it appears unlikely for several reasons. As mentioned, the medical staff members reviewed all patients being treated at the hospital and were blind to the treatment status and assignment of participants. During weekly team meetings, the first author, who conducted all of the ACT sessions and also served as a case manager for those participants as well as patients outside the study, had an opportunity to report on the progress of all patients assigned to her. Because TAU counselors also served the same roles, they were also in a position to potentially overreport the progress of participants assigned to them. Thus, the first author would have to have exerted relatively greater influence over the medical staff than the TAU counselors in order to bias the discharge decision. This seems especially unlikely given that the medical staff relied upon multiple sources

of information from additional treatment team members in reviewing each patient. Even if the first author had deliberately attempted to persuade the medical staff to prematurely discharge a given ACT participant, it seems highly likely that counterprevailing input from other team members would have neutralized such efforts.

The use of objective data, such as that from the posttreatment assessment or a similar battery, as the primary, if not exclusive, information to determine whether discharge criteria had been met for each participant would have obviously minimized concerns about any undue influence upon or bias by the medical staff. Although future researchers may wish to follow such a process, we opted against it in order to maintain this study's ecological validity and strengthen the external validity of its findings. Because participants went through the same process of review for discharge as all other patients hospitalized at the site where this study was conducted, the overall results, despite the modest sample size, would appear to have increased generality.

Of necessity, in attempting to optimize the external validity of this project, some compromises had to be made to its internal validity. As a consequence, even if any possible concerns about the integrity of the discharge process can be set aside, it is by no means clear that differences in the treatment dosage measures favoring ACT can be regarded as effects specific to it. The significant reduction in levels of experiential avoidance across the treatment phase that were also correlated with improvement in self-reported depression for ACT participants alone suggests that ACT successfully impacted the process it targets. However, the possibility that the differential changes noted on the AAQ were largely reflective of demand characteristics cannot be completely ruled out. The items on the AAQ may become at least somewhat transparent to those who have even minimal exposure to ACT. Unfortunately, until alternative means of assessing experiential avoidance are developed that are less susceptible to participants possibly responding in the way they assume researchers want them to, more incisive investigations of ACT's mechanisms of therapeutic action may be hampered.

Even if it is assumed that ACT exerted its therapeutic influence through an expected mechanism, the possibility that alternative treatment approaches might show a similar and comparable advantage over TAU cannot be precluded. In particular, to the extent that TAU counselors, as expected, focused on the alcohol use disorder of participants to the exclusion of their depression, any approach that addresses both might be more efficacious with inpatients exhibiting such comorbidity. Additional research, for example, comparing a more traditional cognitive-behavioral approach in which both presenting problems might be targeted sequentially to both ACT and TAU would help resolve this issue. If a cognitive-behavioral or similar approach were found to be comparable to ACT, but superior to TAU, it would suggest that therapies that address both disorders may be more efficacious than those that do not, regardless of how they do so. Alternatively, if ACT was found to be more efficacious than a cognitive-behavioral option, such findings would suggest a relative advantage for a transdiagnostic approach such as ACT that simultaneously targets putative pathogenic processes common to both alcohol use and depressive disorders over one that addresses both in a more sequential and less integrated manner.

Given the limited sample size of this study and its other limitations, it seems most useful to regard it as a preliminary investigation into the

possible promise of extending ACT to the treatment of co-occurring clinical problems. While we are encouraged by our overall findings reported here, further research is obviously needed to specifically replicate and extend them to other client populations, in both inpatient and outpatient settings, who also struggle with both alcohol use and depressive disorders. The even larger issue of whether ACT may be able to effectively address other co-existing clinical conditions as well is a related empirical question that can also only be answered by additional research. Regardless of the ultimate outcome of such investigations, the challenges presented by psychiatric comorbidity in our view warrant their undertaking.

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