

## A randomized, controlled trial of acceptance and commitment therapy and cognitive-behavioral therapy for chronic pain

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### ABSTRACT

Individuals reporting chronic, nonmalignant pain for at least 6 months (N = 114) were randomly assigned to 8 weekly group sessions of acceptance and commitment therapy (ACT) or cognitive-behavioral therapy (CBT) after a 4–6 week pretreatment period and were assessed after treatment and at 6-month follow-up. The protocols were designed for use in a primary care rather than specialty pain clinic setting. All participants remained stable on other pain and mood treatments over the course of the intervention. ACT participants improved on pain interference, depression, and pain-related anxiety; there were no significant differences in improvement between the treatment conditions on any outcome variables. Although there were no differences in attrition between the groups, ACT participants who completed treatment reported significantly higher levels of satisfaction than did CBT participants. These findings suggest that ACT is an effective and acceptable adjunct intervention for patients with chronic pain.

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## 1. Introduction

Cognitive-behavioral therapy (CBT) has strong support as an intervention for chronic pain [3,14,15,40,49,59,62,63]. Treatment typically focuses on reducing pain and distress through modifying physical sensations, catastrophic thinking, and maladaptive behaviors. Not all patients respond to CBT, however, and its effects on disability may be limited [15,40]. Moreover, research on mechanisms underlying the effects of CBT could ultimately help to improve interventions.

In contrast to CBT and other models focused on reducing pain severity, the acceptance and commitment therapy (ACT) model is based on the theory that attempts to change certain aversive internal experiences, such as chronic pain, are likely to be futile at best, and at worst may contribute to increased distress and interference [35,56]. The ACT treatment model consists of awareness and non-

judgmental acceptance of all experiences, both negative and positive; identification of valued life directions; and appropriate action toward goals that support those values [23]. The objective is to improve functioning and decrease interference of pain with value-driven action; the mechanism is presumed to be acceptance, in contrast to control-oriented treatments such as CBT[21].

Evidence from the literature on thought and emotion suppression, coping styles, and clinical disorders and psychotherapy processes supports the theoretical underpinnings of ACT [58,60,71]. Moreover, the results of laboratory pain induction tests with normal control subjects [32,46,52] and individuals with chronic pain [55,68] have demonstrated that acceptance is associated with increased pain tolerance and decreased recovery time, relative to distraction or control strategies. Cross-sectional as well as longitudinal investigations have found that acceptance is associated with better emotional, social, and physical functioning among patients with chronic pain [16,17,19,33,37,42,64,67]. Comparisons of acceptance- and control-based strategies have shown that the former are associated with better functioning in chronic pain patients [37,45].

ACT has empirical support for several mental and physical health problems, and support for the use of ACT in chronic pain

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is growing [3,11,20,22,25,28,31,54,69,72,73]. Division 12 (Clinical Psychology) of the American Psychological Association cites “modest” support for ACT as an empirically supported treatment for chronic pain ([http://www.div12.org/PsychologicalTreatments/treatments/chronicpain\\_act.html](http://www.div12.org/PsychologicalTreatments/treatments/chronicpain_act.html)), and the Substance Abuse and Mental Health Services Administration lists ACT on its National Registry of Evidence-based Programs and Practices (<http://nrepp.samhsa.gov/ViewIntervention.aspx?id=191>). The 2 largest investigations of ACT for chronic pain found strong effects on measures of physical and psychosocial disability, mood, and 2 physical performance measures in patients undergoing a group-based, intensive, interdisciplinary 3- or 4-week program [44,65]. Pilot work suggested that ACT may produce superior outcomes to CBT for chronic pain [69].

The primary aim of this study was to examine the efficacy of an ACT protocol designed for an outpatient primary care setting and compare it with CBT in individuals with diverse chronic pain conditions. Hypotheses were: (1) ACT will produce improvements in pain interference and also in pain severity, emotional distress, activity levels, and quality of life for patients with chronic benign pain conditions relative to a baseline treatment-as-usual period; (2) ACT will produce significantly greater improvements in these outcomes and higher levels of satisfaction with treatment than CBT; and (3) pain acceptance will mediate treatment response in ACT, and perceived pain control will mediate treatment response in CBT.

## 2. Methods

### 2.1. Participants

Participants were 114 individuals, 18 to 89 years old, reporting chronic nonmalignant pain of any type for at least 6 months, with pain severity and interference ratings of at least 5/10 on a numerical rating scale. They were recruited through VA San Diego Healthcare System primary care clinics (38.6%), advertisements (19.3%), a letter to the editor published in the San Diego *Union-Tribune* newspaper (18.4%), pain support groups (10.5%), other studies (5.3%), referrals from other participants (4.4%), and UCSD clinics (3.5%). Participants were excluded if they had a history of psychotic illness or manic episode, or a substance use disorder within the 6 months before recruitment, ascertained using the Structured Clinical Interview for DSM-IV (SCID) [18]; were currently participating in psychotherapy for pain; or had serious medical conditions that could interfere with participation.

In addition, participants were required to be stable on all pain or mood treatments for at least 2 months before enrolling onto the study and to remain stable on such treatments over the course of participation unless medically necessary, in order to rule out explanations for changes in pain or mood external to the study treatments. Participants for whom changes were ordered ( $n = 4$  before starting study treatment;  $n = 5$  after starting treatment) received a final assessment and were withdrawn from the study. The study was approved by the University of California, San Diego Institutional Review Board and the VA San Diego Healthcare System Research and Development Committee. All participants gave written informed consent.

### 2.2. Procedures

Methods and procedures were consistent with CONSORT guidelines for conducting and reporting randomized clinical trials [48]. Fig. 1 depicts the flow of participants through the study. After a baseline assessment that included a medical evaluation by a study physician as well as the SCID psychiatric diagnostic interview, par-

ticipants were randomly assigned in small groups to receive either ACT or CBT. Groups rather than individuals were randomized in order to minimize delays between recruitment and group-administered treatment. Twenty groups were conducted; typically 6 participants were assigned to each group, but a few groups were formed with 4 or 5 participants out of consideration for limiting the waiting time for participants who had been recruited earlier. The group randomization table was generated by a computer before recruitment and was held by one of the study therapists. The principal investigator, research assistants, and the other study therapist did not have access to this information, and the therapist holding the list did not have any pretreatment contact with participants or access to information about which participants were assigned to a particular group. Similarly, participants were not aware of their assignment until their first session.

After randomization but before starting the intervention, participants were monitored over a 4–6 week waiting period to ensure stability of existing pain treatments and evaluate change over time during a pretreatment baseline during which they received their usual care. They were administered the primary outcome measure weekly by telephone during the pretreatment and intervention periods.

Participants completed a second assessment immediately before starting treatment, a third assessment after completion of 8 sessions of weekly treatment, and a fourth assessment 6 months after completion of treatment. Assessments were conducted by research assistants (RAs) blind to treatment condition. Blindness was evaluated by having the RAs guess each participant's assignment; these guesses were no more accurate than chance (percentage agreement = 50.6%,  $\kappa = 0.01$ ). Participants who dropped out during either the pretreatment phase ( $n = 15$ ) or after starting treatment ( $n = 14$ ) were requested to complete a final assessment. Ten individuals who dropped out during the pretreatment phase and 4 who dropped out during treatment did so. Participants were compensated for their participation. A total of 57 participants were randomized to ACT and 57 to CBT; 49 participants attended at least 1 ACT session and 43 completed at least 6 sessions of ACT treatment. Fifty participants attended at least 1 CBT session and 42 completed at least 6 sessions of CBT treatment.

### 2.3. Measures

Assessments included measures of pain interference, pain severity, emotional distress, physical activity, quality of life, and treatment satisfaction. Outcome measures were chosen with regard to VA recommendations [50] as well as recommendations from the Initiative on Methods, Measurement, and Pain Assessment in Clinical Trials (IMMPACT) [13]. In order to examine the mechanisms of action of both treatments, measures of pain control and pain acceptance were included as potential mediators.

#### 2.3.1. Primary outcome

The primary outcome was the Brief Pain Inventory Short Form Interference subscale (BPI) [10]. This 9-item subscale, recommended by the IMMPACT group as a measure of functioning [13], measures the degree to which pain interferes with various aspects of life, including mobility and social activities. The BPI also includes a 4-item subscale for pain severity. Both subscales show high internal consistency and are sensitive to treatment change [61]. Cronbach's alpha coefficients were .88 for the Interference and .80 for the Severity subscales in the study. This instrument was administered weekly during both the pretreatment and treatment phases as well as at posttreatment and 6-month follow-up.

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