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The Mediating Role of Acceptance in Multidisciplinary Cognitive-Behavioral Therapy for Chronic Pain

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Abstract: Cognitive-behavioral therapy (CBT) is the most frequently delivered psychological intervention for adults with chronic pain. The treatment yields modest effect sizes, and the mechanisms of action remain understudied and unclear. Efforts are needed to identify treatment mediators that could be used to refine CBT and improve outcomes. The primary aim of this study was to investigate whether pain-related acceptance, from the psychological flexibility model, mediates changes in outcome over time in a CBT-based treatment program. This includes comparing how this variable relates to 3 other variables posited as potential mediators in standard CBT: life control, affective distress, and social support. Participants attended a 5-week outpatient multidisciplinary program with self-report data collected at assessment, posttreatment, and 12-month follow-up. Multilevel structural equation modeling was used to test for mediation in relation to 3 outcomes: pain interference, pain intensity, and depression. Results indicate that effect sizes for the treatment were within the ranges reported in the CBT for pain literature. Pain-related acceptance was not related to pain intensity, which is in line with past empirical evidence and the treatment objectives in acceptance and commitment therapy. Otherwise, pain-related acceptance was the strongest mediator across the different indices of outcome. Accumulated results like these suggest that acceptance of pain may be a general mechanism by which CBT-based treatments achieve improvements in functioning. More specific targeting of pain-related acceptance in treatment may lead to further improvements in outcome.

***Perspective:** Potential mediators of outcome in a CBT-based treatment for adult chronic pain were investigated using multilevel structural equation modeling. The results highlight the role of pain-related acceptance as an important treatment process even when not explicitly targeted during treatment. These data may help clinicians and researchers better understand processes of change and improve the choice and development of treatment methods.*

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***Key words:** Acceptance and commitment therapy, acceptance, cognitive-behavioral therapy, chronic pain, mediator, multilevel structural equation modeling.*

At present, cognitive-behavioral therapy (CBT) is the most widely used psychological treatment for adults with chronic pain and is considered a standard treatment.[54] CBT-based treatments for chronic pain are multicomponent in nature, including methods to 1) increase knowledge about pain, 2) address beliefs that may interfere with engagement in activities, 3) improve patients' skills and change their behavior, and 4) improve physical and social activity. Many different interventions are employed under the same general rubric of CBT for chronic pain.[10,14,15,48] One example is multidisciplinary treatment for chronic pain, which often is based on a cognitive-behavioral framework. This format for delivery of treatment for chronic pain is frequently employed around the world, especially in

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North America and Europe, and has established benefits.[14,15,35]

Although superior in comparison to no treatment or treatment as usual, CBT produces only small to medium effect sizes for pain and related disability.[54] The modest effects for CBT for chronic pain have drawn increasing attention to the theoretical models that underpin CBT and multidisciplinary approaches that involve CBT more broadly. Greater efforts are needed to identify "process variables" or mediators that could be used to refine CBT and improve outcomes.[50,54,56]

A large number of psychological variables have been identified as potential CBT process variables, including pain beliefs and perceived control over pain,[19,20,50] social support,[42,43] coping,[19,20] self-efficacy,[50] helplessness,[4-6] affective distress,[52] and catastrophizing.[4,6,45,46,50,52] CBT-based treatments have typically taken a broad focus on processes for change and incorporated diverse packages of methods. So far, evidence from studies of these treatments has not revealed which processes and methods are most effective or necessary in determining outcome.[54,56] In fact, relatively few treatment outcome studies have undertaken to measure and analyze possible mediators[50,51,57] or change processes[4-6,19,20,45,46] in chronic pain trials.

The process of "acceptance" first appeared in a study of chronic pain more than 20 years ago (Geiser, unpublished, 1992) though it is not currently a predominant focus within treatment development. It can be defined as the conscious embrace of psychological experiences when to otherwise attempt to avoid them negatively impacts on overall functioning. It is sometimes referred to as willingness or openness. Acceptance is a component of psychological flexibility, the core therapeutic focus of acceptance and commitment therapy (ACT).[17] Components of psychological flexibility have been identified as mediators in trials of ACT for chronic pain.[51,57] Also, pain-related acceptance appears to underlie improvement in outcomes for chronic pain where acceptance is specifically targeted, as in ACT,[32,33] and where it is not targeted, as in traditional CBT approaches.[2,56] It has been argued that psychological flexibility is a fundamental aspect of health.[21] Here we focus on pain-related acceptance as similarly "fundamental" to outcome for chronic pain. Further, in previous studies of pain treatment, pain-related acceptance has not been compared with other potential mediators so that their relative contribution could be examined.

The primary aim of this study was to investigate whether pain-related acceptance mediates changes in outcome over time in a CBT-based multidisciplinary pain treatment program. This includes comparing how acceptance, which was not explicitly targeted, relates to 3 other potential mediators that are intended targets in broad CBT-based treatment packages and the examined treatment program: life control,[19,20,50] affective distress,[52] and social support.[42,43]

Two hypotheses were tested in the present study. First, improvements on measures of pain interference, pain intensity, and depression at posttreatment and 12-month follow-up would be observed and the level of improvements would be consistent with previously published efficacy studies of CBT-based treatments for adults with chronic pain. Second, pain-related acceptance would demonstrate significant and unique mediating effects in relation to changes in outcome measures during treatment even when other potential mediators are taken in to account.

Methods

Participants

Participants were 409 consecutive referrals between 2009 and 2012 admitted to a 5-week, outpatient, CBT-based multidisciplinary program at the Pain Rehabilitation Unit at Skåne University Hospital. The unit is a government-supported, regional specialist center that also offers other treatment options and assessments. Patients are admitted to the 5-week program if they meet the following criteria: 1) are between 18 and 65 years of age, 2) speak Swedish fluently, 3) have symptoms of chronic pain that impact significantly on everyday life, 4) have undergone a full medical examination and received appropriate medical treatment where indicated, and 5) are able to function in a group setting and participate in a 5-week program involving 5 to 7 hours per day 2 to 4 days a week. Patients are not admitted to the program if they have acute or severe psychiatric disorders or symptoms; are actively abusing analgesic medications (including narcotics), alcohol, or other drugs; or have already undergone similar treatment. Patients are offered transportation to the clinic or provided with accommodation if they require it.

The participating patients were 342 women and 67 men between the ages of 18 and 61 years (mean = 41.7, standard deviation = 10). The majority (82.2%) were born in Sweden or another Nordic country. Most (55.2%) had upper secondary school as their highest education level, whereas 11.2% completed secondary school and 27.9% studied at university level. Approximately half of the participants (51.3%) were currently working or studying to some degree. The mean number of pain locations in the body was 15.9, with an average duration of pain of 7.3 years. The mean self-reported usual pain intensity over the past week (rated on 0–10 scale) was 7.2 (standard deviation = 1.6). The most commonly identified diagnosis was fibromyalgia (25.2%), followed by cervicocranial syndrome (15.9%), cervicobrachial syndrome (15.9%), low back pain (5.6%), and myalgia (4.6%). All participants gave written informed consent prior to their data being used in the study, and the Regional Ethical Review Board in Lund, Sweden (2013/381), gave ethical approval for the study.

Treatment

Three multidisciplinary teams with training in CBT and extensive experience of pain rehabilitation delivered the treatment based on cognitive-behavioral principles. The teams included an occupational therapist, a clinical psychologist, a physician, a physiotherapist, and a social worker. Team members met each patient for assessment

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