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Shorter communication

Effects of cognitive therapy for depression on daily stress-related variables

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ABSTRACT

This study used a daily diary design to evaluate depressed patients' changes on daily stress-related variables during cognitive therapy (CT). Patients completed daily diaries on two week-long occasions: after the intake interview and again after the sixth session of CT. Patients also completed a measure of depressive symptoms before every treatment session. After six sessions of CT, patients reported a significant reduction in: (a) depressive symptoms; (b) daily sad affect (SA); (c) daily negative thoughts associated with the day's most stressful event; and (d) SA reactivity to daily stressors. In addition, patients reported a significant increase in: (e) daily positive affect (PA); and (f) SA reactivity to daily negative thoughts. The results suggest that CT has its intended effects on the daily lives of depressed adults, and highlight the value of a daily diary methodology for research on CT.

Cognitive therapy (CT) for depression teaches patients to reduce their negative affect (NA) by using adaptive cognitive and behavioral strategies to deal with stressful situations, modify negative automatic thoughts, increase their engagement in positive activities, and ultimately modify their core beliefs (Beck, Rush, Shaw, & Emery, 1979). Several studies have investigated the mechanisms of change in CT for depression, with a focus on cognitive variables such as automatic negative thoughts, as measured, for example, by the Automatic Thoughts Questionnaire (Hollon & Kendall, 1980), and dysfunctional attitudes, as measured by the Dysfunctional Attitude Scale (DAS; Weissman & Beck, 1978). This research has shown that CT reduces the frequency of patients' negative thoughts and the severity of their dysfunctional attitudes, and that these changes are associated with depression-reduction over the course of treatment (see the recent review by Garratt, Ingram, Rand, & Sawalani, 2007).

Although the aforementioned literature has advanced our understanding of CT, it also has some limitations, including its reliance on single-administration questionnaires, such as the ATQ (Hollon & Kendall, 1980) and the DAS (Weissman & Beck, 1978). CT is designed, in part, to influence the frequency of automatic thoughts and the regulation of NA, both in response to daily stress. Compared to single-administration questionnaires, a daily diary methodology is better suited to measure these constructs, which reflect cognitive and emotional processes in the context of everyday stressful experiences. Specifically, this type of methodology, which involves repeated assessment over days and sometimes weeks, reduces retrospective biases usually found in cross-sectional studies, and allows the capture of daily processes involving stressors, automatic thoughts, and mood that are thought to underlie stress-related reactivity (Bolger & Zuckerman, 1995).

To our knowledge, only two studies to date, both from our research group, have used a daily diary methodology with CT patients. Both evaluated patient predictors of CT outcome, and not the process of change in CT, but their findings suggest the heuristic value of this type of methodology in the study of therapeutic change (Cohen et al., 2008; Gunthert, Cohen, Butler, & Beck, 2005). In both studies, CT outpatients completed nightly surveys indicating their daily stress and daily NA, and in both studies, patients' initial NA reactivity to daily stress predicted their response to CT. Specifically, patients who were less emotionally reactive to daily stress at the beginning of treatment, that is, had relative strengths in daily affect regulation, evidenced faster rates of change over the course of therapy. Because the data reported in the current paper were obtained from patients who participated in Cohen et al., it is important to note that these authors operationalized NA reactivity as the within-person index of the linear relationship between number of daily stressors and daily NA. Therefore, a highly reactive patient would have a strong positive within-person relationship between these two variables.

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Although one of the major goals of CT is to improve patients' ability to regulate NA in the face of daily and major stressful events, to our knowledge, no research to date has evaluated the effects of CT on patients' daily affective reactivity. With this treatment goal in mind, we used a daily diary methodology in the current study, in which depressed patients completed nightly surveys for one week prior to treatment (time 1) and again for one week after the sixth session of treatment (time 2). The DAS was also administered at both times. The nightly diaries included items for daily negative and positive events, daily NA and positive affect (PA), and the frequency of negative thoughts associated with the day's most stressful event. Based on the diary measures, the major variables included: (a) patients' mean daily sad affect (SA); (b) patients' mean daily PA; (c) the frequency of patients' negative thoughts associated with the day's most stressful event; (d) patients' SA reactivity to daily stress, involving both same-day and next-day affect (i.e., affective spillover; Cohen et al., 2008); and (e) patients' PA reactivity to daily positive events. The reactivity-based indices were computed to evaluate possible predictors of change in CT involving daily stress-related processes.

Most psychotherapy researchers suggest the assessment of patients' symptoms repeatedly, to model the recovery trajectory during therapy (Laurenceau, Hayes, & Feldman, 2007). Therefore, in this study, we assessed depression before every treatment session. Research has shown that a significant proportion of total change in CT for depression occurs before session six (Ilardi & Craighead, 1994). Therefore, in the study of the effects of CT, and the mechanisms responsible for those effects, it is especially important to evaluate change during the early sessions of treatment. Thus, we evaluated patients' depressive symptoms at every session during the first six sessions of treatment.

We predicted that after six sessions of treatment, patients would show a reduction in their: (a) depressive symptoms; (b) DAS scores; (c) average daily SA; (d) daily negative thoughts associated with the day's most stressful event; and (e) SA reactivity to daily negative events. We also predicted that patients would show an increase in their: (f) average daily PA; and (g) PA reactivity to daily positive events. This last prediction was based on studies that have shown that depressed patients, compared to healthy controls, have blunted PA responses to positive stimuli (Bylsma, Morris, & Rottenberg, 2008). We also predicted that changes b–g above would be associated with a decrease in depression during treatment.

For exploratory purposes, we also examined change in patients' SA reactivity to their daily negative thoughts in response to the worst event of the day. Final exploratory analyses examined whether changes in these stress-related variables influenced symptom reduction, or vice versa.

Method

Participants

Participants were 54 adult outpatients (≥21 years) receiving CT at the Beck Institute for Cognitive Therapy and Research (Bala Cynwyd, PA) who met *Diagnostic and statistical manual* (DSM-IV; American Psychiatric Association, 1994) criteria for major depressive disorder (MDD). All of these patients also served as participants in Cohen et al. (2008). Ninety-five patients met study criteria, 77 agreed to participate, and of those, 54 completed the study.

Many participants had comorbid diagnoses. Specifically, 24 patients (44%) had an additional anxiety disorder diagnosis and fifteen patients (28%) were also diagnosed with Axis II disorders. Thirty-four (63%) participants were women. The average age was 42.54 years ($SD = 13.28$; range = 21–83). The sample was predominantly Caucasian (87%) and well educated. See Cohen et al. (2008) for a description of exclusionary criteria, how diagnoses were determined, and more complete demographic information.

The average length of treatment was 13.72 sessions ($SD = 10.98$); 85% of the participants attended at least eight treatment sessions. Fifty-seven percent of the participants also received concurrent psychopharmacological treatment during the study.

Procedure

The overall design of the project was: (a) after the intake session, but before the first therapy session, patients completed a battery of questionnaires, including the DAS (Weissman & Beck, 1978), and seven consecutive nightly diaries (time 1); (b) immediately after the sixth therapy session, patients again completed the questionnaire battery and seven consecutive nightly diaries (time 2); and (c) immediately before each therapy session, patients completed the Beck Depression Inventory (BDI-II; Beck, Steer, & Brown, 1996). The diaries were completed via an interactive voice response (IVR) system, in which patients participated in nightly automated phone interviews. See Cohen et al. (2008) for a description of the IVR procedure. The study was conducted in compliance with the Institutional Review Board of the first author's university.

Treatment was provided weekly by two male and one female doctoral-level licensed psychologists. The two male psychologists provided treatment to all but three of the participants ($n = 29$ and 22 patients, respectively). At the time of the study, they had 13, 10, and 23 years of experience with CT, respectively.

Cohen et al.'s (2008) findings are based on the time 1 diary data and patients' depression scores assessed over 12 sessions of treatment. Cohen et al. focused on patient predictors of CT outcome, whereas this study focused on CT's effects on daily stress-related variables after six sessions of treatment.

Questionnaire measures

Dysfunctional attitudes

The 40-item DAS (Weissman & Beck, 1978) measures the maladaptive attitudes of depressed and depression-prone individuals. Participants rated items on a 1–5 scale in which 1 = *totally agree* and 5 = *totally disagree*. At both time 1 and time 2, Cronbach's alpha was .95 for the current sample.

Depression

Depressive symptoms were assessed at intake and immediately before each therapy session using the 21-item BDI-II (Beck et al., 1996). Participants rated items for symptom severity on a 4-point scale. At intake, the mean BDI-II score was 32.00 ($SD = 9.16$).

Diary measures

Affect

End-of-day affect items were based primarily on the Positive and Negative Affect Scale (PANAS-X; Watson & Clark, 1994). The negative affect items included the five PANAS-X Sadness (SA) items. The positive affect (PA) items included the five highest loading items from the 10-item PANAS-X Positive Affect Scale (Watson & Clark, 1994). Each night, patients were instructed to "tell us how much you feel this way at this moment, right now" (1 = *very slightly or not at all*; 3 = *somewhat*; 5 = *a lot*). Within-person reliability was computed by transforming item scores into *z*-scores within each participant. Using these values, Cronbach's alphas at time 1 were .83 and .68 for SA and PA, respectively. At time 2, they were .81 and .73, respectively.