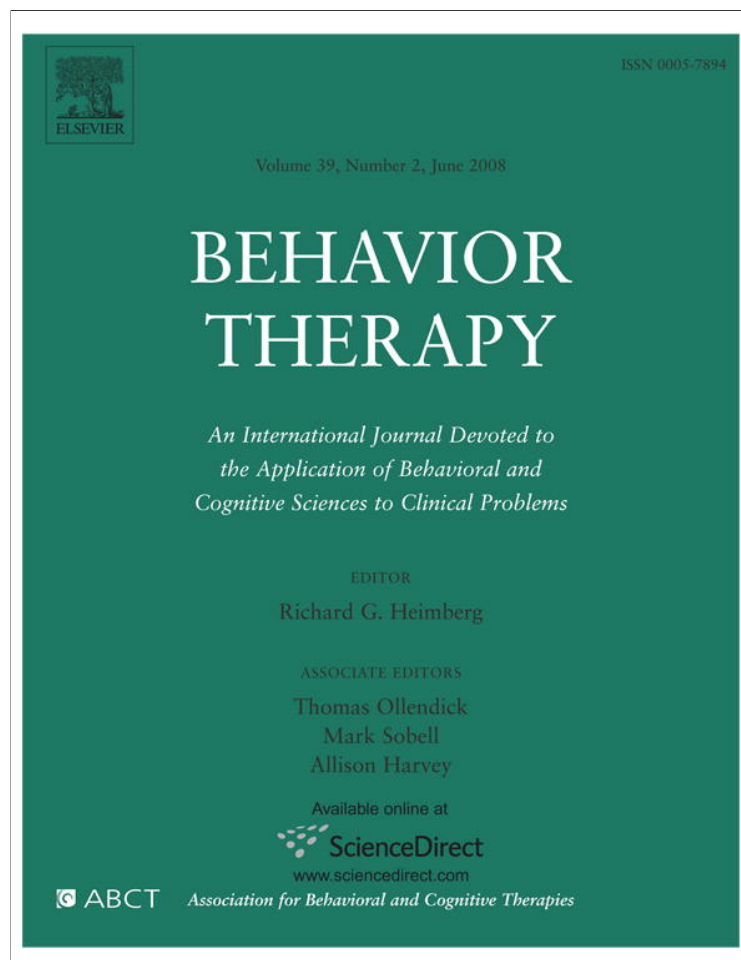


Provided for non-commercial research and education use.  
Not for reproduction, distribution or commercial use.



This article appeared in a journal published by Elsevier. The attached copy is furnished to the author for internal non-commercial research and education use, including for instruction at the authors institution and sharing with colleagues.

Other uses, including reproduction and distribution, or selling or licensing copies, or posting to personal, institutional or third party websites are prohibited.

In most cases authors are permitted to post their version of the article (e.g. in Word or Tex form) to their personal website or institutional repository. Authors requiring further information regarding Elsevier's archiving and manuscript policies are encouraged to visit:

<http://www.elsevier.com/copyright>



## Cognitive-Behavior Therapy for Depressed Cancer Patients in a Medical Care Setting

Derek R. Hopko

University of Tennessee, Knoxville

John L. Bell

University of Tennessee Medical Center Cancer Institute

Maria Armento, Sarah Robertson, Christen Mullane, Nicole Wolf

University of Tennessee, Knoxville

Carl W. Lejuez

University of Maryland, College Park

Major depression is the most common psychiatric disorder among cancer patients and is associated with decreased quality of life, significant deterioration in recreational and physical activities, relationship difficulties, sleep problems, more rapidly progressing cancer symptoms, and more metastasis and pain relative to nondepressed cancer patients. Although some research has explored the utility of psychological interventions with cancer patients, only one study to date has explored the potential benefits of cognitive-behavior therapy among cancer patients with *well-diagnosed depression*. Addressing this gap in the literature, this study represents an open clinical trial to assess the effectiveness of a brief Cognitive-Behavioral Treatment for Depression (CBTD) among depressed cancer patients in a medical care setting. Results revealed strong treatment integrity, good patient compliance, excellent patient satisfaction with the CBTD protocol, and significant pre-post treatment gains across a breadth of outcome measures assessing depression, anxiety, quality of life, and medical outcomes. These gains also were associated with strong effect sizes and generally maintained at 3-month follow-up. Behavioral activation

interventions, especially when paired with cognitive techniques, may represent a practical medical care treatment that may improve psychological outcomes and quality of life among cancer patients. Study limitations and future research directions are discussed.

AMONG CANCER PATIENTS, major depression is the most common psychiatric disorder, with prevalence rates ranging from 13% to 50% (Croyle & Rowland, 2003). Functional impairment among depressed cancer patients is extensive, including exacerbation of medical illness, impact on physical health, and increased anxiety and substance use (Baum & Andersen, 2001; Evans et al., 2005; Lundberg & Passik, 1997; Ronson & Razavi, 2000). Significant deterioration also is observed in quality of life, including recreational activities, social life, family relationships, self-care skills, physical activities, and sleep (Baum & Andersen, 2001; Ciaramella & Poli, 2001). Depressed cancer patients also experience decreased immune system functioning, a more rapid progression of cancer symptoms, more metastasis and pain, and possibly increased mortality relative to nondepressed patients (Ciaramella & Poli, 2001; Spiegel & Giese-Davis, 2003). Economic issues also are consequential in that depression in cancer patients is associated with increased physician time, more frequent hospital and primary care visits, and higher cost to the system (Carlson & Butz, 2004;

Research supported by a National Cancer Institute grant awarded to the first author (R03CA112918-01).

Address correspondence to Derek R. Hopko, Ph.D., University of Tennessee-Knoxville, Department of Psychology, 307 Austin Peay Building, Knoxville, TN 37996-0900; e-mail: [dhopko@utk.edu](mailto:dhopko@utk.edu).

0005-7894/07/126-136\$1.00/0

© 2007 Association for Behavioral and Cognitive Therapies. Published by Elsevier Ltd. All rights reserved.

Hewitt & Rowland, 2002). Given the impact of depression, the importance of developing and evaluating psychosocial interventions for depressed cancer patients has been highlighted as a pressing need (Spiegel & Giese-Davis, 2003).

Psychological interventions for cancer patients have included psychoeducation, supportive therapy, cognitive therapy, relaxation training, problem-solving and social skills training, biofeedback, and hypnosis (Andersen, 1992; Baum & Andersen, 2001; Carlson & Butz, 2004; Evans et al., 2005). In studies assessing the efficacy of these interventions, several have reported reduced symptoms of depression, anxiety, and pain (Antoni et al., 2001; Carlson & Butz, 2004; Goodwin et al., 2001; Moorey, Greer, Bliss, & Law, 1998; Trijsburg, van Knippenberg, & Rijpma, 1992). However, there are also several studies in which psychosocial interventions have had minimal impact in reducing psychological distress (e.g., Cunningham et al., 1998; Edelman, Bell, & Kidman, 1999). Moreover, in the most rigorous review of the literature to date that summarized the effectiveness of psychosocial interventions for cancer patients, it was concluded that although no intervention can be highly recommended for reducing depression in cancer patients, there are some data to support group therapy, education, structured counseling, cognitive-behavioral therapy, communication skills training, and self-esteem building approaches (Newell, Sanson-Fisher, & Savolainen, 2002).

It certainly is true that in the past three decades, important progress has been made toward exploring the efficacy of psychosocial interventions with cancer patients. A number of methodological and practical limitations characterize many of these studies, however, and highlight the need for further scientific inquiry (Newell et al., 2002). First, in *none* of the outcome studies referenced herein did researchers target cancer patients with *well-diagnosed major depression* (i.e., through using empirically valid structured interviewing strategies). As such, it is unclear the extent to which positive effects of psychosocial interventions extend beyond non-clinical samples to clinically depressed patients, a population that is more difficult to treat (McCullough, 2000). Second, outcome measures have primarily been limited to core symptoms of depression and anxiety. Only infrequently has attention been given to outcomes that include functional status (quality of life, medical outcomes, social support) and patient satisfaction. Third, interventions studied in prior clinical trials have often been ill defined. Further, several interventions that potentially may be useful in medical care settings may not be optimal given such factors as the

expertise and number of sessions required for their administration (Coyne & Kagee, 2001).

As a potentially very practical solution, cognitive-behavioral therapies that emphasize behavioral activation (Hopko & Lejuez, 2008; Lejuez, Hopko, & Hopko, 2002; Martell, Addis, & Jacobson, 2001) may be useful interventions for medical care settings and cancer patients. First, behavior activation therapy is time limited and less complicated than many other interventions for depression. Second, behavioral activation engenders healthy non-depressed behavior by way of guided behavioral scheduling, problem solving, and avoidance reduction strategies. Particularly relevant to cancer patients, considering limitations in overt behavior and increased problems and daily hassles often reported by cancer patients (Ciaramella & Poli, 2001; Nezu, Nezu, Houts, Friedman, & Faddis, 1999), this intervention may be optimal in bringing about behavior change and corresponding reductions in depressive affect. Behavioral activation also involves increasing "control" over one's life (and overt behavior), an attribute that may be useful in restoring the loss of control often experienced by cancer patients (Sandoval, Brown, Sullivan, & Green, 2006). Indeed, behavioral activation addresses essential components of cancer treatment that include enhancing social support, emotional expression, reordering of life priorities, stress management, avoidance reduction, and issues of symptom control and health education (Fawzy, Fawzy, & Canada, 2001). For example, through structured activation approaches, the quality of social support is assessed on an ideographic basis as it pertains to intimate, peer, and familial relationships. Graduated exposure to social situations, development of assertiveness and social skills, and social anxiety reduction strategies are used to increase response contingent positive (social) reinforcement and decrease negative affect. Through incorporating behavioral activation strategies that include self-hypnosis, mindfulness exercises, and relaxation practice (Hopko & Lejuez, 2008), cancer-related symptoms that include pain, nausea, and vomiting also can be addressed (Newell et al., 2002).

In a pioneering study of mechanisms of change, behavioral activation was deemed as effective as a full cognitive behavior therapy intervention in reducing depressive symptoms (Jacobson et al., 1996). Following this study, behavioral activation approaches have been effectively used with depressed patients in a community mental health center (Lejuez, Hopko, LePage, Hopko, & McNeil, 2001), an inpatient psychiatric facility (Hopko, Lejuez, LePage, Hopko, & McNeil, 2003), as a supplemental intervention for patients with coex-

istent Axis I (Hopko, Hopko, & Lejuez, 2004; Jakupcak et al., 2006; Mulick & Naugle, 2004) and Axis II disorders (Hopko, Sanchez, Hopko, Dvir, & Lejuez, 2003), and in both individual and group therapy formats (Porter, Spates, & Smitham, 2004). In perhaps the most definitive study that incorporated a randomized placebo-controlled design, the comprehensive behavioral activation protocol (Martell et al., 2001) was comparable to antidepressant medication, and both interventions were superior to cognitive therapy in treating depressed patients (Dimidjian et al., 2006).

Most relevant to the current study, our research team conducted a preliminary study that investigated the efficacy of a 9-session brief behavioral activation therapy (Lejuez et al., 2002) among depressed cancer patients in a medical care setting (Hopko, Bell, Armento, Hunt, & Lejuez, 2005). Results indicated significant pre-post treatment gains on measures of depression that included the Hamilton Rating Scale for Depression (HRSD; Hamilton, 1960), Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996), and the Center for Epidemiological Studies of Depression Scale (CES-D; Radloff, 1977). Self-reported quality of life (Quality of Life Inventory; Frisch, 1994) and medical functioning (Medical Outcomes Study Short Form; Ware & Sherbourne, 1992) also improved following the intervention, and patient satisfaction was strong. However, pre-post treatment anxiety symptoms did not improve following behavioral therapy. Partially as a result of these findings, the behavioral activation intervention was modified to include treatment components hypothesized to better attenuate co-existent anxiety symptoms (cognitive-behavioral therapy for depression or CBTD). From a theoretical perspective, intervention modification also was conducted to better address cancer-relevant cognitive encodings, appraisals, and expectancies (Miller, Fang, Diefenbach, & Bales, 2001), sleep problems (Anderson et al., 2003), and increased problems and daily hassles often reported by cancer patients (Nezu et al., 1999). Although the number of treatment sessions remained the same and the behavioral activation protocol was administered in its usual format (Hopko et al., 2005), relaxation training, brief cognitive therapy, cancer exposure, problem solving, and sleep skills training also were administered during sessions. The primary hypothesis was that depressed cancer patients would still exhibit substantial pre-post treatment outcome gains on measures of depression, quality of life, and medical outcomes, but also that the more comprehensive protocol might be more valuable in diminishing anxiety-related responding.

## Method

### PARTICIPANTS

Participants included 18 adults with a principal diagnosis of major depression who were being treated at the University of Tennessee Medical Center's Cancer Institute. Patients were recruited through clinic screening procedures and clinic brochures. If patients expressed interest in being assessed for study inclusion, they completed the Harvard Department of Psychiatry National Depression Screening scale (HANDS; Baer et al., 2000), a brief measure that assesses depressive symptoms. The HANDS is a 10-item instrument that has a score range of between 0 to 30, with a cut-point score of 9 or greater having diagnostic sensitivity of 95% (Baer et al., 2000). Accordingly, patients who met this criterion were asked to participate in the pretreatment diagnostic assessment. This assessment included administration of the Anxiety Disorders Interview Schedule-IV<sup>1</sup> (ADIS-IV; Brown, DiNardo, & Barlow, 1994), HRSD, and various self-report instruments (outlined below). Advanced clinical psychology graduate students conducted psychological assessments and were supervised by the principal investigator (DH) in the context of audiotape review and discussion, resulting in a consensus diagnosis. Individuals were included only if they were greater than 18 years of age, diagnosed with cancer, and had a principal (and primary) consensus diagnosis of major depression with moderate severity [i.e., a "4" on a 0 (*no depressive symptoms*) to 8 (*very severe symptoms*) scale].

Clinic screening occurred over an 8-month period during which 23 prescreened individuals agreed to complete the comprehensive assessment. Of these patients, 18 were included (5 patients were not diagnosed with depression) and 13 individuals completed the entire CBTD protocol. Five patients were lost to attrition (28%).<sup>2</sup> Of these patients, three discontinued prior to initiating treatment (two because of physical symptoms/side effects associated with concurrent cancer treatment and one for undisclosed reasons because of an inability to contact) and two following the second session (transportation issues). The final sample consisted of 11 females and 2 males, all Caucasian [mean age = 52.2 years ( $SD = 10.9$ )]. Patients had an average education of 14.8 years ( $SD = 2.2$ ). Mean level of clinician-rated severity of major depression was

<sup>1</sup> Note that the Anxiety Disorders Interview Schedule-IV comprehensively assesses for all anxiety and mood disorders and also includes screens for substance abuse and psychotic disorders.

<sup>2</sup> Note that the attrition rate is relatively equivalent to that reported for other cognitive-behavioral interventions for depression (DeRubeis, Gelfand, Tang, & Simons, 1999; Hollon, Thase, & Markowitz, 2002).

5.7 ( $SD=1.1$ ), suggesting moderate clinical depression. Coexistent diagnoses included generalized anxiety disorder (GAD;  $n=7$ ), social phobia ( $n=3$ ), panic disorder ( $n=1$ ), obsessive-compulsive disorder (OCD;  $n=1$ ), specific phobia ( $n=1$ ), and anxiety disorder not otherwise specified ( $n=1$ ). Cancer diagnoses were breast cancer ( $n=7$ ), lung cancer ( $n=1$ ), stomach cancer ( $n=1$ ), colon cancer ( $n=1$ ), prostate cancer ( $n=1$ ), pancreatic cancer ( $n=1$ ), and bone cancer ( $n=1$ ), and the average time since diagnosis was 1.5 years ( $SD=2.0$ ). All of the participants had either Stage 1 or 2 cancer. Of the 13 patients, 3 were actively engaged in chemotherapy or radiation therapy during their participation in psychotherapy ( $M=4.3$  sessions of psychotherapy). Participants were included only if they were not presently taking an antidepressant or anti-anxiety medication ( $n=5$ ), or if they were taking one of these medications, they had been stabilized at a consistent dosage for 8 weeks prior to study assessment ( $n=8$ ).

#### OUTCOME MEASURES

The *Hamilton Rating Scale for Depression* (HRSD; Hamilton, 1960) is a 24-item semistructured interview designed to measure symptom severity in patients diagnosed with depression. The instrument is the most widely used and accepted outcome measure for the evaluation of depression and has become the standard outcome measure in clinical trials (Kobak & Reynolds, 1999) ( $\alpha=.80$  and range [ $R$ ]=10 to 36 for the present study).

The *Beck Depression Inventory-II* (BDI-II; Beck et al., 1996) consists of 21 items, each of which is rated on a 4-point Likert scale. The instrument has been demonstrated to have excellent reliability and validity with depressed younger and older adults (Beck et al., 1996; Dozois, Dobson, & Ahnberg, 1998). The psychometric properties of the BDI-II have been studied in cancer patients as well as a diverse primary care sample, with the instrument having strong predictive validity as it pertains to diagnoses of clinical depression, strong internal consistency ( $\alpha=.94$ ), and adequate item-total correlations ( $R=.54$  to  $.74$ ; Arnau, Meagher, Norris, & Bramson, 2001; Katz, Kopek, Waldron, Devins, & Thomlinson, 2004) ( $\alpha=.89$  and  $R=16$  to 51 for the present study).

The Center for Epidemiological Studies of Depression Scale (CES-D; Radloff, 1977) is a 20-item self-report questionnaire of depressive symptoms that has adequate psychometric properties and modestly relates to a diagnosis of major depression (Nezu, Ronan, Meadows, & McClure, 2001; Radloff, 1977). However, the CES-D was reported to have strong predictive validity as it pertained to diagnosing clinical depression in patients

with head and neck cancer (Katz et al., 2004). Moreover, strong internal consistency, a stable factor structure, and good predictive validity also was demonstrated in a sample of newly diagnosed cancer patients (Beeber, Shea, & McCorkle, 1998) ( $\alpha=.83$  and  $R=21$  to 54 for the present study).

The Beck Anxiety Inventory (BAI; Beck & Steer, 1993) is a 21-item questionnaire designed specifically to distinguish cognitive and somatic symptoms of anxiety from those of depression. Good psychometric properties have been demonstrated among community, medical, and psychiatric outpatient samples (de Beurs, Wilson, Chambless, Goldstein, & Feske, 1997; Morin et al., 1999; Wetherell & Areán, 1997) ( $\alpha=.92$  and  $R=3$  to 48 for the present study).

The Quality of Life Inventory (QOLI; Frisch, 1994) is a 16-item self-report measure of life satisfaction. The instrument provides a global measure (ranging from  $-6$  to  $+6$ ) based on the average of satisfaction ratings across a range of life domains. The scale is a valid and reliable measure of life satisfaction (Frisch, 1999) ( $\alpha=.82$  and  $R=(-3$  to  $+4)$  for the present study).

The Medical Outcomes Study Short Form (SF-36; Ware & Sherbourne, 1992) assesses health and functional status and includes eight subscales: Physical Functioning, Role Disability-Physical Problems, Bodily Pain, Health Perceptions, Vitality, Social Functioning, Role Disability-Emotional Problems, and Mental Health. The SF-36 has a stable factor structure and adequate internal and external validity (Dexter, Stump, Tierney, & Wolinsky, 1996; Ware & Sherbourne, 1992) ( $\alpha=.82$  and  $R=0$  to 87 for the present study). Factor structure, strong internal consistency, and good discriminant validity also were demonstrated for the measure in a sample of patients with laryngeal cancer (Mosconi, Cifani, Crispino, Fossati, & Apolone, 2000).

The Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988) is a 12-item scale that assesses adequacy of social support from family, friends, and significant others. The instrument has adequate psychometric properties in clinical and nonclinical samples of adults (Stanley, Beck, & Zebb, 1998; Zimet et al., 1988) ( $\alpha=.87$  and  $R=12$  to 81 for the present study). The measure was included to assess whether activation strategies designed to increase social reinforcement translated into patients perceiving stronger social support systems at posttreatment.

Satisfaction with CBTD was assessed with the Client Satisfaction Questionnaire (Larsen, Attkisson, Hargreaves, & Nguyen, 1979). The scale is an 8-item measure (scored from 0 to 32), with higher scores indicating greater treatment satisfaction.

## CBTD INTERVENTION

Behavioral activation is the central component of CBTD and is defined as a therapeutic process that emphasizes structured attempts to increase overt behaviors that bring patients into contact with reinforcing environmental contingencies and corresponding improvements in thoughts, mood, and overall quality of life (Hopko, Lejuez, Ruggiero, & Eifert, 2003). A number of cognitive-behavioral therapies for depression have been developed over the years, including traditional behavioral approaches that progressively have integrated more cognitively based strategies (cf. Hopko, Lejuez, Ruggiero, et al., 2003), problem-solving therapy (Nezu, Nezu, & Perri, 1989), self-control therapy (Rehm, Kaslow, & Rabin, 1987), cognitive-behavioral analysis system of psychotherapy (CBASP; McCullough, 2000), traditional cognitive therapy (Beck, Rush, Shaw, & Emery, 1979), and several others (cf. Friedman & Thase, 2006). In the cognitive-behavioral intervention assessed in this study, the overwhelming emphasis was on the behavioral activation component, with other components considered supplemental and administered in an abbreviated format. So although CBTD may not be a novel intervention per se in that many of its components have been examined in other outcome work, it is unique in its strong emphasis on behavioral activation strategies—a component of depression treatment in need of more systematic research (Hopko, Lejuez, Ruggiero, et al., 2003).

Within the behavioral activation model (see Lejuez et al., 2002 for the comprehensive protocol), the process of increasing response-contingent reinforcement follows the basic behavioral principles of extinction, shaping, fading, and in vivo exposure (Hopko et al., 2003). Initial sessions consisted of assessing the function of depressed behavior, establishment of patient rapport, and introduction of the treatment rationale. Once efforts were made to reduce reinforcement for depressed behavior, a systematic approach for increasing healthy behavior was initiated by increasing the value of reinforcers for such behavior and devaluing reinforcers for depressed behavior.

Within this model, systematically increased healthy activity is a necessary precursor in the reduction of overt and covert depressed behavior. Patients began by engaging in a weekly self-monitoring (or daily diary) exercise to examine already occurring daily activities to provide a baseline measurement and to identify potential activities to target during treatment. Following this monitoring, emphasis shifted to identifying a person's values and goals within a variety of life areas that included family, social, and intimate relationships, education,

employment/career, hobbies/recreation, volunteer work/charity, physical/health issues, and spirituality (Hayes, Strosahl, & Wilson, 1999). Following this exercise, an activity hierarchy was constructed in which 15 activities were rated ranging from "easiest" to "most difficult" to accomplish. Using a master activity log and behavioral checkout to monitor progress, patients progressively moved through the hierarchy, moving from the easier behaviors to the more difficult. For each activity, the therapist and patient collaboratively determined the *final goal* in terms of the frequency and duration of activity per week. These goals were recorded on the master activity log that was kept in the possession of the therapist. *Weekly goals* were recorded on a behavioral checkout form that the patient brought to therapy each week. At the start of each session, the behavioral checkout form was discussed, with the following weekly goals established as a function of patient success or difficulty. Treatment involved 9 (1-hour) sessions that included psychoeducation, presentation of the treatment rationale, activity and goal selection, and behavioral activation.

In this more comprehensive CBTD approach, additional treatment components included relaxation training, cognitive therapy, behavioral exposure, problem-solving skills training, and sleep management skills. Relaxation training (integrated into Session 2) involved breathing retraining and postural relaxation. Cognitive therapy (integrated into Sessions 5 and 6) included thought stopping, coping self-statements, and training in alternative thoughts and logical errors. Behavioral exposure involved three written exercises (integrated into Sessions 3, 4, and 5) that were designed to expose cancer patients to the experience of being diagnosed and living with cancer. Patients were particularly encouraged to write about situational details and emotional (physical, cognitive, and behavioral) experiences involved with being diagnosed and living with cancer and then to process these experiences with the clinician. Problem-solving skills training (integrated into Session 7) was based on procedures outlined by Nezu and colleagues (1989), and sleep management (sleep hygiene and stimulus control; Session 8) followed the strategies of Morin (1993).

## THERAPISTS AND TREATMENT INTEGRITY

Three clinical psychology (doctoral) students served as therapists. All therapists were skilled in the administration of cognitive-behavioral interventions and were specifically trained by the first author to administer CBTD. To ensure competent provision of CBTD, all sessions were audiotaped

for weekly individual supervision sessions conducted by the principal investigator (DH). In addition, 20% of these tapes were selected randomly for ratings of therapist competence and adherence by an independent evaluator with expertise in CBTD (S.D.H., M.A). Ratings were made on 0 (*no adherence/competence*) to 8 (*complete adherence/competence*) Likert-type scales on a session-by-session basis, with ratings for each session highlighting specific session objectives. For example, for Session 6 (which included behavioral activation and cognitive therapy components), an adherence and competence rating was made for each component (i.e., a total of four ratings). Ratings indicated high therapist adherence ( $M=7.3$ ;  $SD=1.0$ ) and competence ( $M=7.1$ ;  $SD=1.1$ ) in administering CBTD.

#### PROCEDURE

Following the diagnostic screening described above, eligible participants were administered the ADIS-IV and all self-report measures. If included in the study following the diagnostic staffing, participants completed the 9-week (one-on-one) CBTD treatment. All psychological assessments and treatment sessions were conducted at the Cancer Institute. When it was convenient, therapy sessions were scheduled to coincide with medical appointments. However, as only three of the study participants engaged in cancer treatment during the course of their psychotherapy, the overwhelming majority of patients were seen on a weekly basis without having a concurrent medical appointment scheduled. As two assessment and therapy rooms were reserved for study personnel and ongoing communication and regularly scheduled meeting times were maintained among the principal investigator, director of the cancer institute (JB), medical oncologists, and staff, obstacles impeding data collection were quite limited. Posttreatment assessments were conducted following completion of CBTD and at 3-month follow-up. All patients were assessed and treated by the same clinical graduate student.

## Results

#### PATIENT ADHERENCE

In terms of meeting regularly on a weekly basis, participants were largely compliant with treatment (mean number of weeks to complete CBTD = 10.0,  $SD=1.3$ ). In addition, the structure of CBTD allows for a unique and quantifiable index of patient adherence with treatment recommendations based on weekly behavioral checkout and master activity log data. Specifically, an adherence score was formulated for each patient by dividing the number

of behavioral assignments completed by those assigned. For the entire sample, patients averaged 145.6 ( $SD=54.6$ ) assigned activities over the duration of treatment, or about 24.3 behaviors per each of the 6 sessions that behavioral assignments were provided. Patients completed an average of 118.9 ( $SD=49.8$ ) assigned activities, resulting in an overall patient adherence score of 82%.

#### TREATMENT OUTCOME DATA

All clinical variables were examined with repeated-measures analyses of variance (pretreatment, post-treatment, 3-month follow-up).<sup>3</sup> Significant effects were followed by Tukey HSD post hoc analyses ( $\alpha=.05$ ), and the clinical significance of pre-post differences was assessed using Cohen's *d* statistic, for which effect sizes of .2, .5, and .8 are considered small, medium, and large, respectively. As reported in Table 1, significant main effects of treatment were evident across all outcome measures with the exception of the SF-36 (bodily pain) subscale and the MSPSS. Post hoc analyses revealed significant pre-post treatment improvement on measures of depression, anxiety, quality of life, and medical outcomes, improvements that were clinically significant as indicated by moderate-large effect sizes ( $R=0.6$  to  $2.0$ ). All treatment gains were maintained at 3-month follow-up. Interestingly, although scores for outcome measures at 3-month follow-up continued to be significantly better than those obtained at pretreatment, somatic anxiety (BAI) did increase slightly at follow-up. Although the severity of anxiety symptoms continued to be similar to that reported at posttreatment, symptom severity no longer differed statistically from pre-treatment. Finally, in addition to notable patient improvement, patients were strongly satisfied with CBTD (CSQ:  $M=30.5$  of a possible 32).

To further assess the significance of patient change on a more ideographic level, we utilized the reliable change index, a very rigorous statistic used to assess the clinical significance of pre-post changes for each individual patient (RCI; Jacobson & Truax, 1991). Based on the RCI, all patients improved significantly on the CES-D and all but one patient (92%) improved on the BDI and HRSD. Although clinically significant change was robust across all measures of depression, results specific to individualized change were encouraging but less compelling on other outcome measures. For

<sup>3</sup> A statistical (e.g., Bonferroni) correction was not used given concerns regarding its use with conceptually divergent outcome variables (e.g., depression, social, medical outcomes), experimenter reluctance to increase Type II error, and other concerns associated with statistical adjustment procedures (Perneger, 1998).

Table 1  
Outcome data for cancer patients treated with cognitive-behavioral therapy

Assessment measure	Pre-treatment	Post-treatment	3mo. FU	F	p	Effect size (d)
<i>Center for epidemiological</i>						
Studies of depression scale	30.6 <sup>a</sup> (7.7)	12.5 <sup>b</sup> (9.6)	15.9 <sup>b</sup> (12.6)	14.8	<.001	1.7
Beck depression inventory	25.5 <sup>a</sup> (9.2)	11.5 <sup>b</sup> (9.9)	11.3 <sup>b</sup> (10.2)	35.8	<.001	2.0
Hamilton rating scale for depression	17.5 <sup>a</sup> (6.0)	5.5 <sup>b</sup> (5.4)	5.9 <sup>b</sup> (6.5)	68.5	<.001	2.0
Quality of life inventory	-.4 <sup>a</sup> (2.1)	1.6 <sup>b</sup> (1.8)	1.5 <sup>b</sup> (1.7)	11.3	<.01	0.9
<i>Medical outcomes survey short form</i>						
Physical functioning	49.1 <sup>a</sup> (21.0)	60.9 <sup>b</sup> (29.2)	63.6 <sup>b</sup> (26.0)	3.5	<.05	1.1
Mental health	45.8 <sup>a</sup> (15.5)	64.7 <sup>b</sup> (22.0)	64.0 <sup>b</sup> (24.1)	5.1	<.05	0.8
Role-emotional	18.2 <sup>a</sup> (22.9)	42.4 <sup>b</sup> (47.4)	51.5 <sup>b</sup> (45.6)	5.5	<.05	0.6
Role physical	11.4 <sup>a</sup> (17.2)	43.2 <sup>b</sup> (47.8)	45.5 <sup>b</sup> (45.9)	5.4	<.05	0.7
General health	34.1 <sup>a</sup> (17.1)	51.8 <sup>b</sup> (26.3)	50.9 <sup>b</sup> (21.1)	4.4	<.05	0.6
Bodily pain	44.6 <sup>a</sup> (22.0)	52.0 <sup>a</sup> (23.8)	59.9 <sup>a</sup> (27.3)	2.1	=.14	0.3
Vitality	16.4 <sup>a</sup> (10.3)	41.8 <sup>b</sup> (24.2)	36.8 <sup>b</sup> (23.9)	10.1	<.01	1.2
Social functioning	46.6 <sup>a</sup> (23.8)	70.5 <sup>b</sup> (22.6)	71.6 <sup>b</sup> (25.1)	6.5	<.010.8	0.8
<i>Multidimensional scale of</i>						
Perceived social support	43.9 <sup>a</sup> (20.2)	36.4 <sup>a</sup> (22.3)	36.8 <sup>a</sup> (18.9)	2.3	=.13	0.5
Beck anxiety inventory	15.1 <sup>a</sup> (7.5)	9.5 <sup>b</sup> (6.3)	11.4 <sup>a,b</sup> (8.3)	4.2	<.05	0.9
Client satisfaction questionnaire	–	30.5 (2.3)	–			

Note. Means in the same row with different superscripts are significantly different ( $p < .05$ ).

example, 54% of patients demonstrated statistically significant improvement in somatic anxiety (BAI), and 62% reported increased quality of life (QOLI). On the SF-36, the proportion of patients demonstrating clinically significant change was as follows: physical functioning (62%), mental health (62%), role-emotional (54%), role-physical (54%), general health (62%), bodily pain (54%), vitality (69%), social functioning (62%). Important to note, the two patients (or 15% of completers) with the lowest treatment compliance scores on behavioral activation assignments (49% and 69%) were also least likely to exhibit significant RCI scores across most measures (i.e., only 3 of the 14 scales and subscales in Table 1).

## Discussion

These results provide positive preliminary support for the feasibility and effectiveness of CBTD among depressed cancer patients in a medical care setting. Nomothetic analyses revealed significant pre-post improvement across a variety of depression, anxiety, quality of life, and medical outcome measures, with associated effect sizes being strong. Importantly, treatment gains were maintained at 3-month follow-up on all measures with the exception of the BAI (somatic anxiety).<sup>4</sup> Patient satisfaction with the

CBTD protocol was also very high. The more ideographic (RCI) analyses revealed robust improvement on depression symptoms for all but one patient who exhibited very poor treatment compliance (on behavioral activation assignments). Between 54% and 69% of patients also demonstrated significant improvement on measures of anxiety, quality of life, and medical outcomes, with the two patients with the lowest treatment compliance scores (15% of the sample) generally not exhibiting significant pre-post treatment change.

These findings are provocative in that this is only the second study to document the utility of cognitive-behavior therapy among cancer patients with well-diagnosed depression using a breadth of outcome measures. Interestingly, effect sizes in this study closely resemble those reported in our initial study (using the same outcome measures) in which the “purer” behavioral activation protocol was administered to depressed cancer patients (Hopko et al., 2005). Given the small sample sizes and lack of a randomized control trial design, it would certainly be premature to conclude that the more compact behavioral activation protocol is as efficacious as the more comprehensive CBTD protocol. However, given recent findings that highlight the equivalence (Jacobson et al., 1996) or in some cases superiority of behavioral activation strategies relative to the more inclusive cognitive-behavioral therapies (Dimidjian et al., 2006), this research question certainly warrants further attention. Indeed, from the practical perspective of working toward developing uncomplicated interventions that could be of value in medical

<sup>4</sup> Note that BAI scores were not extremely elevated in this patient sample, despite a significant co-existence of anxiety disorders. We attribute this finding at least partially to the fact that GAD was the primary co-existent anxiety disorder, an anxiety condition less related to somatic symptoms and thus less likely to impact scores on the BAI.

care settings in which time, expertise, and cost-effectiveness is of a premium, the potential utility of brief behavioral activation approaches in these contexts is appealing. Being able to provide these services within medical oncology settings may also substantially increase treatment access and adherence as well as decrease stress in cancer patients who may already be overwhelmed by numerous medical appointments. Finally, as with brief problem-solving interventions administered in medical care settings (Mynors-Wallis et al., 1995, 1997, 2000), it might also be reasonable to effectively incorporate alternative (behavioral activation) treatment providers that might include oncologists, nurses, nurse practitioners, depression health specialists, and/or physician extenders.

Although data from the study are promising, several limitations remain. First, the sample was small and no control group was included. As a move in this direction, a randomized controlled trial is presently under way examining the relative efficacy of behavioral activation and problem-solving therapy for depressed breast cancer patients in a medical care environment. Second, the CBTD intervention studied in this trial was more effective in reducing somatic anxiety than the “purer” behavioral activation protocol examined in our earlier study (Hopko et al., 2005), even though symptom recurrence was somewhat evident at 3-month follow-up. This finding encourages further thought on the role of behavioral activation in treating anxiety symptoms and disorders. For example, in the two larger-scale randomized control trials (Dimidjian et al., 2006; Jacobson et al., 1996), although results strongly supported the use of activation methods for attenuating depressive symptoms, no assessment of anxiety symptoms and disorders and their relation to outcome was presented. This situation is highly problematic given the strong comorbidity between depressive and anxiety symptoms and disorders (Barlow, 2002; Mineka, Watson, & Clark, 1998). Indeed, when clearly distinguishing behavioral activation from exposure-based therapy (Hopko, Lejuez, Ruggiero, et al., 2003), current research on the efficacy of behavioral activation for anxiety conditions is minimal (Hopko et al., 2004; Jakupcak et al., 2006; Mulick & Naugle, 2004). Accordingly, there is a pressing need to assess whether behavioral activation therapies can stand alone or whether these approaches need to be supplemented with efficacious anxiety intervention strategies to more adequately treat co-existent anxiety disorders (DeRubeis & Crits-Christoph, 1998).

As a third limitation, as behavioral activation was supplemented with additional treatment com-

ponents, cautions are necessary in concluding that behavioral activation was the primary mechanism of change. Incorporating a multiple baseline design might be useful in further exploring this issue. In addition, a randomized controlled study that compared “pure” behavioral activation with the more comprehensive approach could answer the question of how vital supplemental strategies were toward patient outcome. Alternatively, the argument also could be made that the integration of supplemental interventions was done in a way that the benefits of the more comprehensive treatment package could not be adequately tested as it was administered (e.g., cognitive therapy and problem-solving therapy generally require more than two sessions), particularly given the very demanding behavioral activation assignments given to patients. Fourth, although CBTD data generally revealed maintenance of gains across a 3-month follow-up interval, longer-term follow-up will be essential to further evaluate whether behavioral activation therapies positively impact adjunctive cancer treatment and/or prolong survival in cancer patients (Spiegel & Giese-Davis, 2003). Fifth, primarily for rapport-building purposes, clinical graduate students conducted both assessments and intervention for patients they were following. As such, although the direct effects of this procedure on most outcome measures (i.e., self-report measures) is likely limited, it is conceivable that rating biases might have on some level contributed to pre-post treatment outcome gains on the clinician-rated HRSD.

Sixth, although the ADIS-IV has good psychometric properties and likely yielded valid diagnostic data for the study, it is conceivable that use of a more comprehensive protocol such as the Structured Clinical Interview for DSM-IV-Patient Version (SCID-IP; First, Spitzer, Gibbon, & Williams, 1996) would have allowed for a more complete diagnostic picture. Indeed, the ADIS-IV was chosen so as to abbreviate an already very time-intensive pretreatment assessment procedure. Relatedly, outcome data also could have been solidified by re-administering the ADIS-IV at posttreatment and follow-up to determine whether patients no longer met DSM criteria for major depression. Seventh, although all outcome measures used in this study have very strong psychometric properties, with the exception of perhaps the BDI-II and CES-D, substantially more empirical work is necessary to demonstrate their utility among cancer patients. For example, it is conceivable that the BAI, which is not well studied among cancer patients, may include somatic symptoms that overlap too greatly with physical symptoms of cancer so as to decrease the likelihood of finding significant and persisting

treatment effects. Finally, although treatment effect sizes were substantial across all measures, a more extensive and heterogeneous patient sample will be necessary to replicate findings and assess external validity. The sample also was too small to assess important predictors of treatment outcome such as the type, duration, and stage of cancer; psychiatric and medical comorbidity; chronicity and family history of depression; pretreatment anxiety, depression, optimism, and social support; treatment expectancy; and previous psychotherapy and/or pharmacotherapy for depression.

Despite these limitations, there is a growing literature to support the effectiveness of behavioral activation therapies and some preliminary data that these approaches may be useful in treating depression in cancer patients. These data are especially important given inadequate attention to recognizing and treating clinical depression in cancer patients and the substantial psychosocial and medical impairment that depressed cancer patients often experience. Further programmatic research in the form of carefully designed randomized controlled trials will help to discern the practicality and efficacy of behavioral activation in reducing depression in cancer patients and other medical samples, as well as whether activation-based treatments may ultimately help to improve quality of care and longevity of life.

## References

- Andersen, B. L. (1992). Psychological interventions for cancer patients to enhance the quality of life. *Journal of Consulting and Clinical Psychology, 60*, 552–568.
- Anderson, K. O., Getto, C. J., Mendoza, T. R., Palmer, S. N., Wang, X. S., Reyes, G., et al. (2003). Fatigue and sleep disturbance in patients with cancer, patients with clinical depression, and community-dwelling adults. *Journal of Pain and Symptom Management, 25*, 307–318.
- Antoni, M. H., Lehman, J. M., Kilbourn, K. M., Boyers, A. E., Culver, J. L., Alferi, S. M., et al. (2001). Cognitive-behavioral stress management intervention decreases the prevalence of depression and enhances benefit finding among women under treatment for early-stage breast cancer. *Health Psychology, 20*, 20–32.
- Arnau, R. A., Meagher, M. W., Norris, M. P., & Bramson, R. (2001). Psychometric evaluation of the Beck Depression Inventory-II with primary care medical patients. *Health Psychology, 20*, 112–119.
- Baer, L., Jacobs, D. G., Meszler-Reizes, J., Blais, M., Fava, M., Kessler, R., et al. (2000). Development of a brief screening instrument: The HANDS. *Psychotherapy and Psychosomatic Research, 69*, 35–41.
- Barlow, D. H. (2002). *Anxiety and its disorders: The nature and treatment of anxiety and panic*, 2nd ed. New York: The Guilford Press.
- Baum, A., & Andersen, B. L. (2001). *Psychosocial interventions for cancer*. Washington, DC: American Psychological Association.
- Beck, A. T., Rush, A. J., Shaw, B. J., & Emery, G. (1979). *Cognitive therapy of depression*. New York: The Guilford Press.
- Beck, A. T., & Steer, R. A. (1993). *Beck anxiety inventory: Manual*. San Antonio, TX: The Psychological Corporation.
- Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Manual for beck depression inventory-II*. San Antonio, TX: Psychological Corporation.
- Beeber, L. S., Shea, J., & McCorkle, R. (1998). The Center for Epidemiologic Studies Depression Scale as a measure of depressive symptoms in newly diagnosed patients. *Journal of Psychosocial Oncology, 16*, 1–20.
- Brown, T. A., DiNardo, P., & Barlow, D. H. (1994). *Anxiety disorders interview schedule for DSM-IV*. San Antonio, TX: The Psychological Corporation.
- Carlson, L. E., & Butz, B. D. (2004). Efficacy and medical offset of psychosocial interventions in cancer care: The case for economic analyses. *Psycho-Oncology, 13*, 837–849.
- Ciaramella, A., & Poli, P. (2001). Assessment of depression among cancer patients: The role of pain, cancer type, and treatment. *Psycho-Oncology, 10*, 156–165.
- Coyne, J. C., & Kagee, A. (2001). More may not be better in psychosocial interventions for cancer patients. *Health Psychology, 20*, 458.
- Croyle, R. T., & Rowland, J. H. (2003). Mood disorders and cancer: A National Cancer Institute perspective. *Biological Psychiatry, 54*, 191–194.
- Cunningham, A. J., Edmonds, C. V. I., Jenkins, G. P., Pollack, H., Lockwood, G. A., & Warr, D. (1998). A randomized controlled trial of the effects of group psychological therapy on survival in women with metastatic breast cancer. *Psycho-Oncology, 7*, 508–517.
- de Beurs, E., Wilson, K. A., Chambless, D. L., Goldstein, A. J., & Feske, U. (1997). Convergent and divergent validity of the Beck Anxiety Inventory for patients with panic disorder and agoraphobia. *Depression and Anxiety, 6*, 140–146.
- DeRubeis, R. J., & Crits-Christoph, P. (1998). Empirically supported individual and group psychological treatments for adult mental disorders. *Journal of Consulting and Clinical Psychology, 66*, 37–52.
- DeRubeis, R. J., Gelfand, L. A., Tang, T. Z., & Simons, A. D. (1999). Medications versus cognitive-behavior therapy for severely depressed outpatients: Mega-analysis of four randomized comparisons. *American Journal of Psychiatry, 156*, 1007–1013.
- Dexter, P. R., Stump, T. E., Tierney, W. M., & Wolinsky, F. D. (1996). The psychometric properties of the SF-36 among older adults in a clinical setting. *Journal of Clinical Geropsychology, 2*, 225–237.
- Dimidjian, S., Hollon, S., Dobson, K., Schmaling, K., Kohlenberg, B., Addis, M. E., et al. (2006). Randomized trial of behavioral activation, cognitive therapy, and antidepressant medication in the acute treatment of adults with major depression. *Journal of Consulting and Clinical Psychology, 74*, 658–670.
- Dozois, D. J., Dobson, K. S., & Ahnberg, J. L. (1998). A psychometric evaluation of the Beck Depression Inventory-II. *Psychological Assessment, 10*, 83–89.
- Edelman, S., Bell, D. R., & Kidman, A. D. (1999). A group cognitive behavior therapy programme with metastatic breast cancer patients. *Psycho-Oncology, 8*, 295–305.
- Evans, D. L., Charney, D. S., Lewis, L., Golden, R. N., Gorman, J. M., Krishnan, K. R., et al. (2005). Mood disorders in the medically ill: Scientific review and recommendations. *Biological Psychiatry, 58*, 175–189.
- Fawzy, F. I., Fawzy, N. W., & Canada, A. L. (2001). Psychoeducational intervention programs for patients with cancer. In A. Baum, & B. L. Andersen (Eds.), *Psychosocial*

- interventions for cancer* (pp. 235–267). Washington, DC: American Psychological Association.
- First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. (1996). Structured Clinical Interview for DSM-IV Axis I Disorders - Patient Edition (SCID-I/P, Version 2.0). *Biometrics Research Department* New York: New York Psychiatric Institute.
- Friedman, E. S. (2006). Cognitive-behavioral therapy for depression and dysthymia. In D. J. Stein, D. J. Kupfer, & A. F. Schatzberg (Eds.), *The American Psychiatric Publishing textbook of mood disorders* Washington, DC: American Psychiatric Press.
- Frisch, M. B. (1994). *Manual and treatment guide for the quality of life inventory*. Minneapolis: National Computer Systems, Inc..
- Frisch, M. B. (1999). Quality of life assessment/intervention and the Quality of Life Inventory (QOLI). In M. E. Maruish (Ed.), *The use of psychological testing for treatment planning and outcome assessment* (pp. 1277–1331), 2nd ed. Mahwah, NJ: Erlbaum.
- Goodwin, P. J., Leszcz, M., Ennis, M., Koopmans, J., Vincent, L., Guther, H., et al. (2001). The effect of group psychosocial support on survival in metastatic breast cancer. *New England Journal of Medicine*, *345*, 1719–1726.
- Hamilton, M. (1960). A rating scale for depression. *Neurology, Neurosurgery and Psychiatry*, *23*, 56–61.
- Hayes, S. C., Strosahl, K. D., & Wilson, K. G. (1999). *Acceptance and commitment therapy: An experiential approach to behavior change*. New York: The Guilford Press.
- Hewitt, M., & Rowland, J. H. (2002). Mental health service use among adult cancer survivors: Analyses of the National Health Institute survey. *Journal of Clinical Oncology*, *20*, 4581–4590.
- Hollon, S. D., Thase, M. E., & Markowitz, J. C. (2002). Treatment and prevention of depression. *Psychological Science in the Public Interest*, *3*, 39–77.
- Hopko, D. R., Bell, J. L., Armento, M. E. A., Hunt, M. K., & Lejuez, C. W. (2005). Behavior therapy for depressed cancer patients in primary care. *Psychotherapy: Theory, Research, Practice, Training*, *42*, 236–243.
- Hopko, D. R., Hopko, S. D., & Lejuez, C. W. (2004). Behavioral activation as an intervention for co-existent depressive and anxiety symptoms. *Clinical Case Studies*, *3*, 37–48.
- Hopko, D. R., & Lejuez, C. W. (2008). *A cancer patient's guide to overcoming depression and anxiety: Getting through treatment and getting back to your life*. New York: New Harbinger Press.
- Hopko, D. R., Lejuez, C. W., LePage, J., Hopko, S. D., & McNeil, D. W. (2003). A brief behavioral activation treatment for depression: A randomized trial within an inpatient psychiatric hospital. *Behavior Modification*, *27*, 458–469.
- Hopko, D. R., Lejuez, C. W., Ruggiero, K. J., & Eifert, G. H. (2003). Contemporary behavioral activation treatments for depression: Procedures, principles, progress. *Clinical Psychology Review*, *23*, 699–717.
- Hopko, D. R., Sanchez, L., Hopko, S. D., Dvir, S., & Lejuez, C. W. (2003). Behavioral activation and the prevention of suicide in patients with borderline personality disorder. *Journal of Personality Disorders*, *17*, 460–478.
- Jacobson, N. S., Dobson, K. S., Truax, P. A., Addis, M. E., Koerner, K., Gollan, J. K., et al. (1996). A component analysis of cognitive-behavioral treatment for depression. *Journal of Consulting and Clinical Psychology*, *64*, 295–304.
- Jacobson, N. S., & Truax, P. A. (1991). Clinical significance: A statistical approach to defining meaningful change in psychotherapy research. *Journal of Consulting and Clinical Psychology*, *59*, 12–19.
- Jakupcak, M., Roberts, L., Martell, C., Mulick, P., Michael, S., Reed, R., et al. (2006). A pilot study of behavioral activation for veterans with posttraumatic stress disorder. *Journal of Traumatic Stress*, *19*, 387–391.
- Katz, M. R., Kopek, N., Waldron, J., Devins, G. M., & Thomlinson, G. (2004). Screening for depression in head and neck cancer. *Psycho-Oncology*, *13*, 269–280.
- Kobak, K. A., & Reynolds, W. M. (1999). Hamilton Depression Inventory. In M. E. Maruish (Ed.), *The use of psychological testing for treatment planning and outcomes assessment* (pp. 935–969), 2nd ed. Mahwah, NJ: Lawrence Erlbaum.
- Larsen, D. L., Attkisson, C. C., Hargreaves, W. A., & Nguyen, T. D. (1979). Assessment of client/patient satisfaction: Development of a general scale. *Evaluation and Program Planning*, *2*, 197–207.
- Lejuez, C. W., Hopko, D. R., & Hopko, S. D. (2002). *The brief behavioral activation treatment for depression (BATD): A comprehensive patient guide*. Boston: Pearson Custom Publishing.
- Lejuez, C. W., Hopko, D. R., LePage, J., Hopko, S. D., & McNeil, D. W. (2001). A brief behavioral activation treatment for depression. *Cognitive and Behavioral Practice*, *8*, 164–175.
- Lundberg, J. C., & Passik, S. D. (1997). Alcohol and cancer: A review for psycho-oncologists. *Psycho-Oncology*, *6*, 253–266.
- Martell, C. R., Addis, M. E., & Jacobson, N. S. (2001). *Depression in context: Strategies for guided action*. New York: Norton.
- McCullough, J. P. (2000). *Treatment for chronic depression: Cognitive behavioral analysis system of psychotherapy*. New York: The Guilford Press.
- Miller, S. M., Fang, C. Y., Diefenbach, M. A., & Bales, C. B. (2001). Tailoring psychosocial interventions to the individual's health information-processing style: The influence of monitoring versus blunting in cancer risk and disease. In A. Baum, & B. L. Andersen (Eds.), *Psychosocial interventions for cancer* Washington, DC: American Psychological Association.
- Mineka, S., Watson, D., & Clark, L. A. (1998). Comorbidity of anxiety and unipolar mood disorders. *Annual Review of Psychology*, *49*, 377–412.
- Moorey, S., Greer, S., Bliss, J., & Law, M. (1998). A comparison of adjuvant psychological therapy and supportive counseling in patients with cancer. *Psycho-Oncology*, *7*, 218–228.
- Morin, C. M. (1993). *Insomnia: Psychological assessment and management*. New York: The Guilford Press.
- Morin, C. M., Landreville, P., Colecchi, C., McDonald, K., Stone, J., & Ling, W. (1999). The Beck Anxiety Inventory: Psychometric properties with older adults. *Journal of Clinical Geropsychology*, *5*, 19–29.
- Mosconi, P., Cifani, S., Crispino, S., Fossati, R., & Apolone, G. (2000). The performance of SF-36 healthsurvey in patients with laryngeal cancer. Head and Neck Cancer Italian Working Group. *Head and Neck*, *22*, 175–182.
- Mulick, P. S., & Naugle, A. E. (2004). Behavioral activation for comorbid PTSD and major depression: A case study. *Cognitive and Behavioral Practice*, *11*, 378–387.
- Mynors-Wallis, L., Davies, I., Gray, A., Barbour, F., & Gath, D. (1997). A randomized controlled trial and cost analysis of problem-solving treatment for emotional disorders given by community nurses in primary care. *British Journal of Psychiatry*, *170*, 113–119.
- Mynors-Wallis, L., Gath, D., Day, A., & Baker, F. (2000).

- Randomized controlled trial of problem solving treatment, antidepressant medication, and combined treatment for major depression in primary care. *British Medical Journal*, 320, 26–30.
- Mynors-Wallis, L., Gath, D., Lloyd-Thomas, A., & Tomlinson, D. (1995). Randomized controlled trial comparing problem solving treatment with amitriptyline and placebo for major depression in primary care. *British Medical Journal*, 310, 441–445.
- Newell, S., Sanson-Fisher, R., & Savolainen, N. (2002). Systematic review of psychological therapies for cancer patients: Overview and recommendations for future research. *Journal of the National Cancer Institute*, 94, 558–584.
- Nezu, A. M., Nezu, C. M., Houts, P. S., Friedman, S. H., & Faddis, S. (1999). Relevance of problem-solving therapy to psychosocial oncology. *Journal of Psychosocial Oncology*, 16, 5–26.
- Nezu, A. M., Nezu, C. M., & Perri, M. G. (1989). *Problem-solving therapy for depression: Theory, research, and clinical guidelines*. New York: Wiley.
- Nezu, A. M., Ronan, G. F., Meadows, E. A., & McClure, K. S. (2001). *Practitioner's guide to empirically based measures of depression*. New York: Kluwer.
- Perneger, T. V. (1998). What's wrong with Bonferroni adjustments? *British Medical Journal*, 316, 1236–1238.
- Porter, J. F., Spates, C., & Smitham, S. S. (2004). Behavioral activation group therapy in public mental health settings: A pilot investigation. *Professional Psychology: Research and Practice*, 35, 297–301.
- Radloff, L. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1, 385–401.
- Rehm, L. P., Kaslow, N. J., & Rabin, A. S. (1987). Cognitive and behavioral targets in a self-control therapy program for depression. *Journal of Consulting and Clinical Psychology*, 55, 60–67.
- Ronson, A., & Razavi, D. (2000). Affective and anxiety disorders in patients with cancer: Optimal management. In K. J. Palmer (Ed.), *Depression associated with medical illness* (pp. 113–128). Kwai Chung, Hong Kong: Adis International.
- Sandoval, G. A., Brown, A. D., Sullivan, T., & Green, E. (2006). Factors that influence patients' overall perceptions of quality of care. *International Journal of Quality Health Care*, 18, 266–274.
- Spiegel, D., & Giese-Davis, J. (2003). Depression and cancer: Mechanisms and disease progression. *Biological Psychiatry*, 54, 269–282.
- Stanley, M. A., Beck, J. G., & Zebb, B. J. (1998). Psychometric properties of the MSPSS in older adults. *Aging and Mental Health*, 2, 186–193.
- Trisjsburg, R. W., van Knippenberg, F. C. E., & Rippma, S. E. (1992). Effects of psychological treatment on cancer patients: A critical review. *Psychosomatic Medicine*, 54, 489–517.
- Ware, J. E., & Sherbourne, C. D. (1992). The MOS 36-Item Short-Form Health Survey (SF-36): I. Conceptual framework and item selection. *Medical Care*, 30, 473–483.
- Wetherell, J. L., & Areán, P. A. (1997). Psychometric evaluation of the Beck Anxiety Inventory with older medical patients. *Psychological Assessment*, 9, 136–144.
- Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The Multidimensional Scale of Perceived Social Support. *Journal of Personality Assessment*, 17, 37–49.

RECEIVED: September 22, 2006

ACCEPTED: May 24, 2007

Available online 31 October 2007