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# Patients' Competence in and Performance of Cognitive Therapy Skills: Relation to the Reduction of Relapse Risk Following Treatment for Depression

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Cognitive therapy (CT) for depression is designed to teach patients material that is believed to help prevent relapse following successful treatment. This study of 35 moderately to severely depressed patients who responded to CT provides the 1st evidence to suggest that both development and independent use of these competencies predict reduced risk for relapse. Among patients who responded to treatment, both CT coping skills and in-session evidence of the independent implementation of CT material predicted lower risk for relapse in the year following treatment. These relationships were not accounted for by either symptom severity at the end of treatment or symptom change from pre- to posttreatment. Self-esteem, assessed at posttreatment, failed to predict risk for relapse in the year following treatment. Thus, CT coping skills and independent use of CT principles, but not overall satisfaction with oneself, appear to play an important role in relapse prevention.

*Keywords:* cognitive therapy, depression, relapse, patient

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Since the introduction of cognitive therapy (CT) for depression (A. T. Beck, Rush, Shaw, & Emery, 1979), a series of clinical trials has established CT as an efficacious treatment with long-lasting effects (for a review, see Strunk & DeRubeis, 2001). Jacobson et al. (1996) suggested that CT is composed of three primary components: behavioral activation (BA), automatic thought work (AT), and schema or core belief work (SC). This method of conceptualizing CT has provided a common language for clinicians and researchers.

## Three Components of CT

BA consists of interventions that encourage patients to increase their activity levels and engage in more constructive activities (A. T. Beck et al., 1979). In a component analysis of CT, a BA-only treatment appeared as effective as the full CT package (Jacobson et al., 1996). Most recently, BA outperformed CT among more severely depressed patients (Dimidjian et al., 2006). Jacobson, Martell, and Dimidjian (2001) asserted that therapists can learn BA with relative ease. If so, BA alone has the potential to be an easily disseminated and effective treatment. Thus, BA is an important part of CT, and evidence suggests it may be an effective stand-alone treatment.

The AT component of CT encompasses techniques designed to teach patients to identify, question, and correct negative depressive thinking. Consistent with the potential utility of this component of CT, Teasdale and Fennell (1982) reported that patients who engaged in 30 min of AT to address a negative thought reported more symptom reduction and belief change than CT patients who merely discussed the thought and related information. In addition, change on self-report cognitive measures early in treatment has been shown to predict subsequent symptom change in CT, but not pharmacotherapy (DeRubeis et al., 1990). Given the efficacy of CT and findings consistent with the hypothesized mechanisms of AT, AT has come to be regarded as an important component of an effective treatment.

SC involves identifying and striving to alter underlying, stable cognitive patterns thought to constitute a vulnerability to depression. In recent years, several experts in CT have placed more emphasis on this component of CT (J. S. Beck, 1995; Persons, Davidson, & Tompkins, 2001; Young, Weinberger, & Beck, 2001). Consistent with the idea that SC may be helpful, Segal et al. (2006) found that CT patients endorsed fewer negative beliefs following a mood induction than patients treated with pharmacotherapy. This cognitive reactivity predicted patients' risk for relapse following their treatment.

When implementing each of the components of CT, therapists aim to help patients develop skills or understandings that are intended to be helpful to them after treatment. Patients who have mastered the BA component of CT may engage in specific behavioral activities to prevent a return of symptoms or to limit symptom

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worsening. Patients who have mastered AT may notice quickly their biased or exaggerated thoughts in reaction to events and then implement strategies to address the thoughts. Patients who have mastered SC may have successfully changed basic depressive beliefs about themselves or may have developed an understanding of their own belief system that could facilitate recognition of problematic thoughts that are associated with their negative core beliefs. Recognizing these thoughts may lead patients to implement strategies to correct their thinking.

## Measuring Patient Competence in, and Performance of, CT Skills

Preliminary research aimed at assessing the competencies patients may acquire in CT has been conducted by Barber and DeRubeis (1992, 2001). They developed the Ways of Responding (WOR) questionnaire as a means to assess the extent to which respondents demonstrate competence with the kind of coping skills encouraged by a cognitive therapist. Respondents are presented with a series of challenging scenarios, each followed by some initial negative thoughts that the respondent is encouraged to imagine. Respondents are then asked to write down what they would think and do in each scenario. Responses in each scenario are divided into units for coding, and then a coding scheme is applied to each unit. The primary index of the WOR is the Total Score, calculated as the number of coded units that would be encouraged by cognitive therapists less the number of units that represent depressotypic statements. In a sample of 27 patients who were undergoing CT for depression, Barber and DeRubeis (2001) found that the average WOR total score was significantly higher after therapy than it was prior to treatment ($d = 1.0$). Moreover, improvement in the WOR total score was significantly correlated with decreases in depressive symptom severity, with an *r*-type effect size of –.54 (Barber & DeRubeis, 2001). These findings are a first step in testing whether the WOR reflects essential skills acquired during CT, but the findings are also consistent with the hypothesis that the WOR simply tracks improvement in depressive symptoms. An important next step in this line of work is to examine whether the skills assessed by the WOR can predict risk for relapse following a successful course of CT.

The WOR was not designed to address a potentially crucial individual difference in coping skills, namely, the likelihood that patients will perform the skills with which they have acquired competence. Thus, for the purpose of this investigation, we developed an observer-rated measure of the extent to which patients appear, in sessions near the end of their course of treatment, to exhibit an independent understanding and use of the material taught in CT. Observers review CT sessions and judge the extent to which patients have mastered CT material and are independently using CT skills; these skills cover the three CT components described above. The rationale for this assessment procedure, and its application to late sessions of therapy, is that patients' in-session behavior, which includes their reports of between-sessions behaviors, may predict their use of CT skills in their lives. In turn, to the extent that a patient uses these skills consistently and competently, this may protect the patient from relapse following the termination of treatment.

We did not have evidence concerning the extent to which patients' performance of CT skills (either demonstrated in session or described in relation to between-sessions activities) would be related to their competence with CT skills, as assessed by the WOR. We therefore conducted an empirical investigation of the association of each of these measures with each other, and with the prevention of relapse following successful CT.

Because the nature of the cognitive changes that might account for relapse resistance following CT is unclear, we also planned to examine whether any predictive relationship between CT skills and risk for relapse could be accounted for by general changes in patients' self-satisfaction. Self-esteem represents a viable alternative predictor of relapse, as change in self-evaluations has long been suggested as an important target in CT (A. T. Beck et al., 1979). Such changes in self-esteem do not necessarily require the use of CT skills, even if they are the result of the application of CT skills during treatment. If competence in, and performance of, CT skills merely reflects changes in self-esteem, however, a focus on the use of CT skills may be unnecessary.

We conducted this investigation by drawing data from a recent randomized clinical trial comparing CT ($n = 60$), paroxetine (augmented with lithium carbonate or desipramine if necessary) with clinical management ($n = 120$), and pill placebo with clinical management ($n = 60$) in the treatment of moderate to severe depression. In that trial, the CT and medication conditions attained roughly equivalent outcomes at the end of the 16-week acute phase (DeRubeis et al., 2005). Important to the present investigation, CT on average exhibited a relapse prevention effect (Hollon et al., 2005). Patients withdrawn from CT were at significantly lower risk for relapse than medication patients who were withdrawn to placebo. This article examines variability within the CT condition in an attempt to predict patients' risk for relapse.

## Method

### *Participants*

*Patients.* Patients were 35 adult outpatients who were deemed to have responded to treatment in the CT condition of a randomized controlled trial of treatments for moderate to severe depression conducted at the University of Pennsylvania and Vanderbilt University (DeRubeis et al., 2005). To be included in the trial, patients needed to be diagnosed with major depressive disorder using the Structured Clinical Interview for *DSM–IV* (First, Spitzer, Gibbon, & Williams, 1994) and receive a score of 20 or above on the Hamilton Rating Scale for Depression (HRSD; Hamilton, 1960; see DeRubeis et al., 2005, for additional criteria).

The mean age of the patients was 42.0 years ($SD = 12.6$); 18 were female, and 17 were male. Fourteen participants (40%) were married or cohabitating. The majority of the sample was White (83%). During the initial evaluation period of the study (1999–2000), the average annual income was about $40,000 with a range of $0 to $120,000. Thirty-one of the 35 participants were employed, pursuing an education, or not expected to work outside the home (e.g., retired, homemaker). The protocol for the 16-week acute phase called for twice weekly sessions for the first 4 weeks, once or twice weekly sessions for the middle 8 weeks, and sessions once per week for the last 4 weeks. The protocol also included an option of three booster sessions in the year following acute treatment. Institutional review boards at the University of Pennsylvania and Vanderbilt University reviewed and approved the study. Informed consent was obtained from all study participants.

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*Therapists.* There were 6 cognitive therapists (4 male) with a range of 5 to 21 years of therapy experience. Five were licensed PhD psychologists and 1 was a psychiatric nurse practitioner. Therapists were to follow the procedures described in standard texts of CT (A. T. Beck, Freeman, Davis, & Associates, 1990; A. T. Beck et al., 1979). Therapists received ongoing supervision throughout the study.

Although data were collected for all patients, partly because of an interest in therapist effects, that is not the focus of this article. Analyses of therapist effects within this article would be seriously confounded in the examination of only those patients who responded to treatment. We are examining therapist effects in a separate project (Strunk, Brotman, DeRubeis, & Hollon, 2007).

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## Measures

*WOR questionnaire.* Participants are asked to imagine themselves in each of six scenarios, each representing a stressful negative situation (e.g., "You have been applying for jobs, and you just received a phone call saying the position you applied for has been filled by someone else. It's the third such call you've received in the last week"). Within each scenario, they are asked to imagine vividly a set of negative thoughts (e.g., "Will I ever get a job? There just doesn't seem to be any point in applying"), after which they are asked to report what their further thoughts and actions would be. The written responses are then scored by raters (Barber & DeRubeis, 1992). Each unit is classified as one of the categories in the WOR *Rater's Guide*. For the total score, categories are collapsed as being either the type of response encouraged by cognitive therapists (e.g., "That isn't true. There are times when I am sensitive to the feelings of others") or a depressotypic statement (e.g., "I guess it was my fault"). As noted earlier, the total score is the numeric difference between the number of CT-encouraged units and the number of depressotypic units.

*Performance of CT Strategies (PCTS).* Raters assessed the extent to which patients demonstrated, through their performance of, their reports of the use of, and their stated intentions to continue the use of, CT skills in each of the three areas (BA, 3 items; AT, 10 items; and SC, 2 items). All items were rated on a Likert-type scale, allowing integer ratings between 0 and 6, inclusive. Ratings of 4 or higher were reserved for reports of independent use of the domain assessed by each item (i.e., clear reports of the patient's making use of this domain between sessions). (For a list of items, please see the Appendix. Complete rating materials are available from Daniel R. Strunk on request.)

*Rosenberg Self-Esteem scale (RSE; Rosenberg, 1965).* The RSE is a 10-item self-report scale designed to measure individuals' global self-evaluation. The scale has been used extensively and successfully in a broad range of psychological research (Blascovich & Tomaka, 1993). Participants are asked to respond to each item on a 5-point Likert-type scale ranging from 1 to 5. Possible scores range from 10 to 50.

*Response and relapse criteria.* The criteria for "response," as described in the report of the primary outcome articles (DeRubeis et al., 2005; Hollon et al., 2005), were the following, applied at the 16-week (end-of-treatment) assessment point: (a) patient no longer meets criteria for major depressive disorder; and either (b) obtains an HRSD $\leq$ 12 and either a 14-week HRSD $\leq$ 14 or a 10-week and 12-week HRSD $\leq$ 12 or (c) obtains a 12-week, a 14-week, and an 18-week HRSD $\leq$ 12 (DeRubeis et al., 2005). In the CT condition, 35 of 60 (58.3%) met these criteria, a rate of response almost identical to that observed in the antidepressant medication condition (69 of 120; 57.5%).

Hollon et al. (2005) reported an adjusted rate of relapse during the 1st year after the end of acute treatment. For the 35 responders to CT, this was a 25% rate of relapse. In survival analyses, observations were censored either at the point at which a patient sought treatment without having evidenced a relapse, or at the time of last contact with the research team, for those patients who were lost to follow-up. Patients met relapse criteria if they were given a score of 14 or greater on the HRSD for 2 consecutive weeks (3 weeks were required during the period of medication withdrawal). As reported previously, interviewers at both sites (four at University of Pennsylvania and three at Vanderbilt University) rated a subset of tapes of these assessments. An intraclass correlation coefficient (ICC) of .96 was obtained for the 17-item total HRSD score ($n = 24$). Assessment of the reliability of the major depressive episode designation yielded a kappa coefficient of .80 ($n = 12$). (See Hollon et al., 2005, for additional information.)

## Procedure for PCTS Ratings

Raters blind to treatment outcome and diagnostic information rated tapes of three sessions of CT for each patient: a session from Week 12, a session from Week 14, and the final session of acute treatment. Tapes were rated in chronological order for each patient. When videotapes were not available, audiotapes were used. Throughout reviewing the sessions for each patient, raters took careful notes about behavior relevant to each PCTS item. After reviewing the last session, raters provided a single set of ratings of the PCTS items. Thus, PCTS scores following this final session reflect raters' judgments of the PCTS based on all sessions reviewed.

Four raters (one graduate student, one postbaccalaureate student, and two undergraduate students) read *Cognitive Therapy of Depression* (A. T. Beck et al., 1979) and completed 70 hr of training prior to making study ratings. Two raters coded each tape. Additional meetings of the entire rating group and pairs of raters occurred periodically to minimize rater drift.

## Procedure for WOR Coding

Responses to the WOR were rated using the three-rater procedure described by Barber and DeRubeis (1992). The raters were two graduate students and one undergraduate student who had undergone extensive training (approximately 14 hr). Training consisted of reviewing previously scored WORs as well as scoring and discussing practice WORs. Prior to being coded, completed WOR protocols were divided into individual scenarios and given random identification numbers. Scenarios were randomized prior to coding. Thus, raters' judgments of individual scenarios were prevented from being contaminated by information from other scenarios within the same protocol. Each WOR scenario was scored by all three raters. The first rater rated the entire scenario for overall quality of the coping response and then divided the text of

Table 1
*Descriptive Statistics for Possible Predictors of Risk for Relapse*

| Variable | *M* | *SD* | *N* |
|---|---|---|---|
| Ways of Responding total score (data at both time points, $N = 31$) | | | |
| Intake | −.6 | 1.7 | 32 |
| Posttreatment | .8 | 1.3 | 32 |
| Performance of Cognitive Therapy Strategies | | | |
| BA | 3.0 | .7 | 34 |
| AT | 2.8 | .9 | 34 |
| SC | 2.9 | 1.3 | 34 |
| Rosenberg Self-Esteem scale (at both time points, $N = 34$) | | | |
| Intake | 23.5 | 5.0 | 34 |
| Posttreatment | 31.0 | 5.0 | 35 |

*Note.* BA = behavioral activation; AT = automatic thought work; SC = schema or core belief work.

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the response into individual thought units.[1] The first rater then rated each thought unit as reflecting 1 of the 25 specific coping categories used in rating the WOR. The second rater performed the same tasks as the first rater, with the exception that he or she used the parsing of thought units determined by the first rater. The second rater was blind to all ratings assigned by the first rater. The third rater resolved any disagreements on assignment of coping categories between the first and second raters. Therefore, the category ratings of the third rater were considered a consensus and used for the main analyses. All raters took turns serving as Rater 1, 2, and 3. All raters were blind to participants' treatment condition and time of assessment.

### *Missing Data*

Some data were missing. Because therapy tapes were not available for 1 participant, PCTS scores were only available for 34 participants. WOR data were available for 32 participants pretreatment and posttreatment. However, as data were not missing for the same patients, WOR data were only available for 31 participants at both pre- and posttreatment. RSE data were missing from 1 participant pretreatment only. Given these missing data, sample sizes for each analysis varied slightly with the sample ranging from 31 to 34 participants for primary analyses. The sample size for each analysis is provided.

### *Psychometric Properties*

ICCs were calculated using a random effects model to estimate the reliability of two pooled raters' judgments of PCTS (Shrout & Fleiss, 1979). The ICCs for the PCTS BA, AT, and SC subscales, respectively were .74, .77, and .83. These scales were all significantly positively correlated with one another (for BA and AT, $r = .65$; for BA and SC, $r = .39$; and for AT and SC, $r = .44$). The ICC for the patients' overall PCTS score (i.e., an average of standardized scores for the competency scales for the three components) was .85. Pooled ratings were used in the data analyses. The internal consistency of the PCTS scales as measured by alpha coefficients ranged from .74 to .94. ICCs for the reliability of the WOR categorical judgments were calculated using Raters 1 and 2 for each protocol. The ICC for the WOR difference score was .71.

## Results

Means, standard deviations, and sample sizes are provided for each potential predictor of relapse in Table 1. The means for the WOR scores pre- and posttreatment were both somewhat lower than those obtained by Barber and DeRubeis's (2001) in a study of outpatient depressed patients participating in CT. Means for the PCTS indicate that, on average, patients were exhibiting moderate independent use of the CT skills in all three domains (i.e., BA, AT, and SC) by the end of treatment. On average, patients scored a 4 or higher on 24% of the 15 PCTS items, indicating that, on the basis of patients' in-session reports, raters estimated significant independent, between-session use of about one fourth of the skills assessed.

Survival analyses were used to address our primary research questions. Our analytic strategy was informed by the primary results of the study. Specifically, primary analyses of the acute phase of treatment from this trial revealed a significant Site × Treatment × Time interaction (DeRubeis et al., 2005), meaning that differences between the outcomes in the two treatment conditions differed between the two sites. This interaction was partly due to patients in CT at the University of Pennsylvania improving a bit more, and a bit more rapidly, than patients in CT at Vanderbilt University. Given this finding, we entered site as a covariate in all analyses.

### *Cognitive Behavioral Coping Skills and Risk for Relapse*

We first examined the WOR total score posttreatment as a predictor of risk for relapse over the course of the 1-year follow-up period. To control for potential pretreatment differences in these skills, we entered the WOR total score at pretreatment as a covariate. Thus, site and the WOR total score at pretreatment were entered as covariates. To ease interpretation, we reverse scored predictors so that hazard ratios greater than 1 reflected increased risk of relapse. In this model, the WOR total score posttreatment

[1] The WOR total score is the primary index of the WOR. Quality of response ratings were highly correlated with the total scores ($r = .91$, $N = 32$, at posttreatment). The pattern of results for the quality of response ratings was similar to that obtained with the WOR total score. Therefore, we focused on WOR total scores.

was a significant predictor of risk for relapse, $\chi^2(1, N = 31) = 4.76$, hazard = 2.01, 95% confidence interval [CI] = 1.02, 4.08, $p = .03$ (see Figure 1). The hazard ratio of 2.01 indicates that for every 1-standard deviation decrease in WOR total scores, patients' risk for relapse during the follow-up period increased 2.01 times.

### *PCTS and Risk for Relapse*

We also examined PCTS as a predictor of risk for relapse during the 1-year follow-up period, using the same strategy as for the WOR. Both site and WOR total scores pretreatment were entered as covariates. Although we did not have a measure of PCTS pretreatment, the WOR at intake was included as a covariate to rule out the possibility that any difference in PCTS merely reflected differences in CT skills pretreatment. Measures of PCTS components were standardized ($M = 0$, $SD = 1$) and averaged to yield a single indicator of overall PCTS for each patient. In this model, overall PCTS emerged as a significant predictor of risk for relapse, $\chi^2(1, N = 32) = 5.46$, hazard = 3.37, CI = 1.22, 9.32, $p = .02$ (see Figure 1). The hazard ratio of 3.37 indicates that a 1-standard deviation decrease in PCTS was associated with 3.37 times greater risk for relapse over the follow-up period.

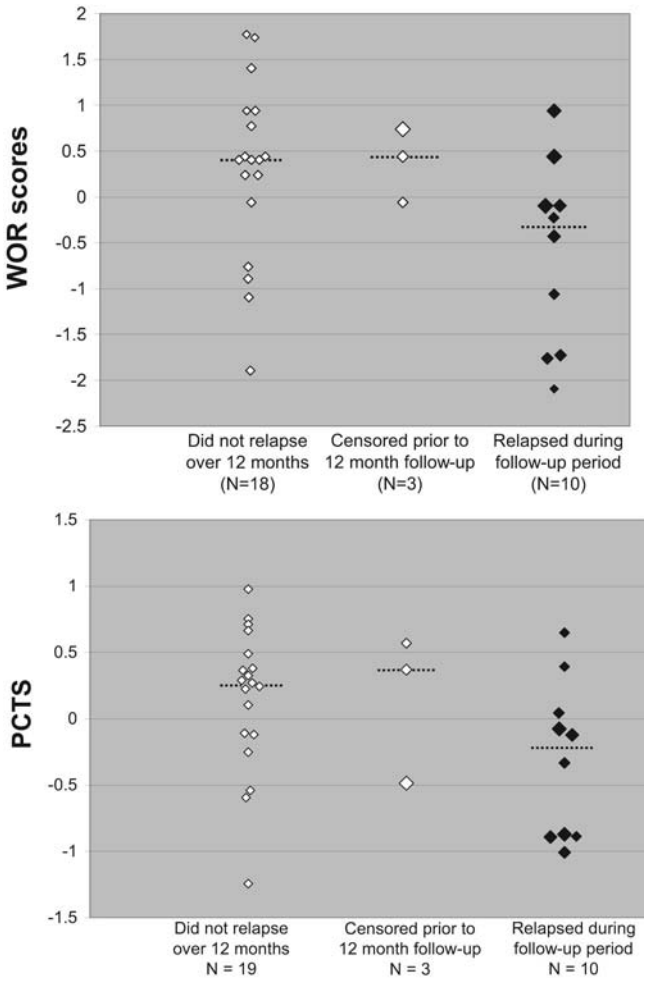


*Figure 1.* Predictors of risk for relapse and outcome over 1-year follow-up. One predictor is displayed along the ordinate of each of the two panels. Outcome over the 1-year follow-up period is displayed along the abscissa. The sizes of the diamonds representing patients' data points reflect the number of months after treatment until these patients relapsed or were censored. Larger diamonds indicate a worse outcome (i.e., shorter time to relapse and longer time until being censored). There are six diamond sizes, reflecting events prior to 2, 4, 6, 8, 10, and 12 months posttreatment. The smallest diamond is three fifths the size of the largest diamond. WOR = Ways of Responding; PCTS = Performance of Cognitive Therapy Strategies.

Separate follow-up survival analyses were conducted for components of the PCTS (BA, AT, and SC), with site and WOR total score at pretreatment as covariates. The BA subscale was associated with reduced risk for relapse at a trend level, $\chi^2(1, N = 32) = 3.20$, hazard = 2.70, CI = 0.91, 8.00, $p = .07$. Although in the expected direction, AT was not significantly associated with reduced risk for relapse, $\chi^2(1, N = 32) = 1.11$, hazard = 1.68, CI = 0.64, 4.41, $p = .29$. Finally, there was a trend for PCTS in SC to predict reduced risk for relapse, $\chi^2(1, N = 32) = 3.80$, hazard = 1.82, CI = 1.00, 3.34, $p = .05$. Thus, PCTS in SC was associated with the (numerically) greatest reduction in risk of relapse, followed by BA PCTS, and finally AT PCTS.

### *Covarying Residual Symptoms*

One explanation for these findings involves the possibility that the WOR and PCTS are merely predictors of risk for relapse to the extent that they are associated with, and thereby reflect, patients' level of residual symptoms posttreatment. Similarly, these measures could reflect the extent of symptom change during acute treatment. To test these possibilities, we examined both residual symptoms (HRSD scores at posttreatment) and symptom change throughout acute treatment (HRSD scores at posttreatment, adjusted for HRSD scores at pretreatment) for each predictor. First, we examined these covariates in a model in which WOR total scores were the key predictor (as before, site and WOR total scores at pretreatment were additional covariates). WOR total score remained a significant predictor with either residual symptoms, $\chi^2(1, N = 31) = 4.39$, hazard = 2.05, CI = 1.05, 4.02, $p = .04$, or symptom change, $\chi^2(1, N = 31) = 4.44$, hazard = 2.06, CI = 1.05, 4.03, $p = .04$, entered as covariates. Similarly, PCTS remained a significant predictor in models with either residual symptoms, $\chi^2(1, N = 32) = 5.26$, hazard = 3.33, CI = 1.19, 9.32, $p = .02$, or symptom change, $\chi^2(1, N = 32) = 5.24$, hazard = 3.34, CI = 1.19, 9.40, $p = .02$, as covariates.

We examined the intercorrelation of the key predictors (i.e., PCTS and WOR total scores posttreatment) and were surprised to find that the correlation was quite low ($r = .11$, *ns*, $n = 32$, with site partialed). Nonetheless, PCTS and WOR total scores at posttreatment were examined as predictors within the same model, with site and WOR at intake as covariates. When WOR total scores were entered last in this model, these scores were significant predictors: WOR total, $\chi^2(1, N = 31) = 4.90$, hazard = 2.38, CI = 1.11, 5.14, $p = .03$. When PCTS scores were entered last in this model, these scores were also significant predictors: PCTS, $\chi^2(1, N = 31) = 5.08$, hazard = 4.38, CI = 1.21, 15.85, $p = .02$. Thus, each of the predictors remained significant when the other predictor was covaried.

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### *Specificity of Predicted Relationships*

To test the specificity of the predicted relationships, we examined self-esteem as a predictor of risk for relapse. Site and self-esteem scores from the intake session were entered as covariates. In this model, RSE scores from the end of treatment failed to predict risk for relapse over the follow-up period, $\chi^2(1, N = 34) = 0.46$, hazard = 0.96, CI = 0.84, 1.09, $p = .5$. Like the other models, a hazard ratio above 1 in this model would have suggested that greater self-esteem scores were predictive of lower risk for relapse. Our nonsignificant result shows that this was not the case and the direction of the relationship was not even as one might expect. Even without self-esteem scores at intake entered as a covariate, self-esteem scores failed to predict risk for relapse, $\chi^2(1, N = 34) = 0.43$, hazard = 0.96, CI = 0.84, 1.09, $p = .5$.

## Discussion

This study provides the first evidence suggesting that patients' acquisition of CT-taught coping skills and patients' independent use of the material learned in CT predict risk for relapse following successful treatment. Thus, our results were consistent with CT's prophylactic effects' being partially attributable to specific skills and understandings developed in therapy. These findings are particularly impressive given the small sample size in the current sample and the low rate of relapse during the follow-up period. The low rate of relapse in this sample (25%) likely restricted our ability to detect effects of interest. Yet, both competence in and demonstrated performance of CT material emerged as independent significant predictors of the sustained positive effects of CT, even when levels of residual depressive symptoms at the end of treatment and amount of improvement of symptoms over the course of treatment were taken into account statistically.

Competence in and demonstrated performance of CT material were surprisingly uncorrelated. One interpretation of this low correlation is that mastery of CT skills was not associated with independent use of these skills. However, future research using multiple methods for measuring each of these constructs could help to clarify this issue. These measures, or related measures that are less labor-intensive, could prove useful clinically as a means of identifying patients who have not sufficiently mastered CT and are not using material taught in CT on their own. Future research could examine whether such patients would benefit substantially from an extension of their course of treatment, until they demonstrated these skills.

### *How Competencies Are Developed*

Although we do not present data to address this issue, our results certainly lead us to wonder what factors determine the development of CT coping skills and PCTS. Possible determinants include therapist characteristics, patient characteristics, and some interaction of these factors. Given previous work, therapist characteristics may deserve special attention. In-session therapist behaviors prescribed in the CT treatment manual have been found to predict subsequent symptom change in several studies (Brotman, Strunk, & DeRubeis, 2007; DeRubeis & Feeley, 1990; Feeley, DeRubeis, & Gelfand, 1999). Therapist competence in delivering the treatment is another possible determinant of patient competencies. Though there have been problems in reliably assessing competence (Jacobson & Gortner, 2000), and evidence for competence as a predictor of therapeutic outcome has been somewhat mixed (Shaw et al., 1999; Trepka, Rees, Shapiro, Hardy, & Barkham, 2004), this is vital question for future research.

### *Self-Esteem*

Our results for self-esteem provide valuable information about the kinds of change most predictive of risk for relapse. Those patients who endorsed the greatest satisfaction with themselves (reflecting high self-esteem) were not at lower risk for relapse. Thus, becoming more satisfied with one'self does not appear particularly helpful in reducing risk for relapse following CT. Rather, specific CT skills (e.g., correcting negative automatic thoughts) and the performance of these skills were associated with lower risk for relapse.

### *Limitations*

Although we did covary pretreatment levels of competence with CT skill in analyzing these skills as predictors of risk for relapse, future research should look to ways to measure the performance of CT skills pretreatment. Such a pretreatment measure would allow investigators to test the possibility that the relationship between the PCTS and risk for relapse is due to pretreatment differences in the PCTS. Given our method, we were not able to rule out this possibility. However, by using the WOR, we were able at least to rule out the possibility that the relation of PCTS and relapse risk was due to pretreatment differences in competence in CT skills.

The specific characteristics of the sample are important to bear in mind in considering the generalizability of our results. Patients in this trial were outpatients with moderate to severe depression. As such, there may have been less variability in other scores than would have been the case if the sample had included patients with mild depression. This would likely have attenuated the results of interest rather than accounted for them. With only 17% of the sample being non-White, we lacked the power to detect potentially important differences between people of differing ethnic or racial backgrounds, if such differences exist.

We provided some evidence that the relationship of competence in and performance of CT skills reflected specific cognitive factors that predict risk for relapse. Another potentially important cognitive measure (i.e., self-esteem) failed to predict risk for relapse. However, the design of the study did not allow us to ask whether the effects we obtained are unique to CT. Future research to address the extent to which these effects generalize to other psychotherapies could shed light on this issue.

Perhaps the most important limitation is that our findings are correlational. Although we made efforts to rule out alternative explanations for our findings, it is possible that third, unidentified variables may account for the relationships we uncovered. For example, we did not assess premorbid levels of our predictors. Thus, it is possible that patients possess and implement CT-relevant skills during their intermorbid periods. These patients may have difficulty practicing their skills during an episode of depression. Such premorbid skills may be operating to forestall relapse after treatment. Only a prospective design that followed partici-

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pants from before the onset of the depressive episode through the episode and remission could address this alternative.

### *Conclusion*

Measures of patients' CT-related coping skills, and the performance of these skills in sessions and between sessions, appeared to index patients' ability to resist relapse after treatment was completed. These findings lend support for the claim that specific skills are learned in CT, and that the possession and use of these skills account, at least in part, for the well-documented ability of a course of CT to prevent relapse. If these findings are replicated, efforts to identify the level of skill in patients who are nearing the end of a course of CT treatment could be used to decrease the risk for relapse even further.

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(*Appendix follows*)

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## Appendix

### Assessment of Use of Cognitive Therapy Material

1. Connection Between Moods and Activities (BA)

Did the patient understand and make use of the connection between moods and activities?

2. Scheduling–Structuring Activities (BA)

Did the patient exhibit the ability to schedule or structure activities?

3. Alternative Behaviors (BA)

Did the patient exhibit the ability to plan, practice, and engage in alternative behaviors?

4. Identifying Automatic Thoughts (AT)

Did the patient exhibit the ability to identify his or her automatic thoughts when they occurred?

5. Recording Thoughts (AT)

Did the patient exhibit the ability to record his or her automatic thoughts?

6. Relating Thoughts and Feelings (AT)

Did the patient understand the relationship between his or her thoughts and feelings?

7. Cognitive Therapy Rationale (AT)

Did the patient exhibit an understanding of the rationale of cognitive therapy (i.e., that by evaluating the accuracy of beliefs and changing inaccurate beliefs, people can alleviate their depression)?

8. Examining Evidence (AT)

Did the patient exhibit the ability to examine evidence for automatic thoughts?

9. Developing Alternative Explanations (AT)

Did the patient exhibit an ability to develop alternative explanations?

10. Identifying Realistic Consequences (AT)

Did the patient exhibit the ability to identify what the realistic consequences of his or her thoughts would be if those thoughts were true?

11. Seeing From a Different Perspective (AT)

Did the patient exhibit the ability to see his or her thoughts or problems from another person's perspective?

12. Evaluating the Effect of Changing Automatic Thoughts (AT)

Did the patient exhibit the ability to evaluate the effect of changing his or her automatic thoughts?

13. Rational Responses (AT)

Did the patient exhibit the ability to generate rational responses to his or her automatic thoughts?

14. Awareness of Schema–Exploring Underlying Assumptions (SC)

Does the patient exhibit an awareness of his or her schema and its influence on the patient's specific automatic thoughts?

15. Development and Maintenance of Schema (SC)

Did the patient exhibit an understanding of the factors that have influenced the development and maintenance of his or her schema?

*Note.* BA = behavioral activation; AT = automatic thought work; SC = schema or core belief work.

Items were designed to assess patients' demonstrated mastery and independent use of material covered in cognitive therapy. Each item is rated on a scale ranging from 0 to 6 indicating the extent to which patients have mastered material. Scores of 0 indicate a reluctance or resistance to a domain. Scores of 0 indicate no ability in the domain being demonstrated. And scores from 1 through 6 indicate increasingly independent application of material learned in a particular domain.

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