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# Cognitive and Behavioral Changes Related to Symptom Improvement among Patients with a Mood Disorder Receiving Intensive Cognitive Behavioral Therapy

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# Cognitive and Behavioral Changes Related to Symptom Improvement among Patients with a Mood Disorder Receiving Intensive Cognitive Behavioral Therapy

## Description

**Objective:** To examine the relationship between cognitive and behavioral changes associated with cognitive behavioral therapy (CBT) and treatment response in an intensive partial hospital (PH) setting. **Methods:** Study participants were 105 patients with mood disorders receiving treatment in a private psychiatric PH setting. The flexible treatment model used evidence-based CBT interventions adapted to the PH context, with emphases on psychoeducation and skills training. Participants completed self-report measures at admission and discharge to assess psychological distress, depression, negative automatic thoughts, and behavioral activation. Mean treatment duration was 9 days. **Results:** Decreased negative automatic thoughts and increased behavioral activation predicted reduction of depressive symptoms; however, only decreased negative automatic thoughts was predictive of patients' overall level of psychological distress. **Conclusions:** These results suggest that a CBT intervention adapted for use in a PH setting can be an effective treatment for severe mood disorders. Furthermore, although the design used in this study precludes causal inferences, depressive symptom improvement appears to be associated with decreased negative automatic thoughts and increased behavioral activation. Implications for the delivery of CBT in PH programs and future directions for research are discussed.

## Disciplines

Mental and Social Health | Psychiatry and Psychology | Psychology

## Comments

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# Cognitive and Behavioral Changes Related to Symptom Improvement among Patients with a Mood Disorder Receiving Intensive Cognitive Behavioral Therapy

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## Abstract

*Objective:* To examine the relationship between cognitive and behavioral changes associated with cognitive behavioral therapy (CBT) and treatment response in an intensive partial hospital (PH) setting. *Methods:* Study participants were 105 patients with mood disorders receiving treatment in a private psychiatric PH setting. The flexible treatment model used evidence-based CBT interventions adapted to the PH context, with emphases on psychoeducation and skills training. Participants completed self-report measures at admission and discharge to assess psychological distress, depression, negative automatic thoughts, and behavioral activation. Mean treatment duration was 9 days. *Results:* Decreased negative automatic thoughts and increased behavioral activation predicted reduction of depressive symptoms; however, only decreased negative automatic thoughts was predictive of patients' overall level of psychological distress. *Conclusions:* These results suggest that a CBT intervention adapted for use in a PH setting can be an effective treatment for severe mood disorders. Furthermore, although the design used in this study precludes causal inferences, depressive symptom improvement appears to be associated with decreased negative automatic thoughts and increased behavioral activation. Implications for the delivery of CBT in PH programs and future directions for research are discussed.

*Keywords:* partial hospital, cognitive-behavior therapy, treatment outcome, evidence-based treatment, mood disorders, depression

## Introduction

There is a wealth of support for the effectiveness of cognitive behavioral therapy (CBT) in the treatment of a variety of psychiatric conditions, including mood disorders.<sup>1-5</sup> Despite evidence of its effectiveness, the precise mechanisms of change in CBT are less clear. In the cognitive model, Beck and his colleagues<sup>6</sup> posit that decreased maladaptive cognitions mediate symptom alleviation, whereas in Lewinsohn's behavioral model,<sup>7</sup> increased contact with reinforcing environmental contingencies (i.e., behavioral activation) results in symptom improvement. Recent mediational and component analyses have yielded support for both behavioral<sup>8,9</sup> and cognitive<sup>10-13</sup> mechanisms of change in the amelioration of mood symptoms; however, several studies investigating the relative importance of

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each of these interventions have yielded varied results. For example, Dimidjian and colleagues<sup>14</sup> found that behavioral activation was more effective in treating severe, chronic depression than cognitive therapy. This finding may suggest that patients who fail to engage in the behavioral components of more comprehensive CBT programs will be less likely to respond to treatment. Alternatively, there is evidence that changes in automatic thoughts occur early in CBT for depression and that patients who recover exhibit a more significant reduction of negative cognitions at the end of treatment than those who do not recover.<sup>15,16</sup> Therefore, a failure to engage in cognitive interventions in the early stages of treatment can also lead to a poor treatment response.

Elucidating the most effective components of CBT in randomized controlled trials continues to be a critical area of inquiry; however, it is also important to investigate these factors among patients with complex clinical profiles in real-world settings,<sup>17</sup> such as intensive partial hospital (PH). Several studies have found that CBT-oriented PH programs provide a cost-effective treatment option for various forms of psychopathology, including personality disorders,<sup>18,19</sup> anxiety disorders,<sup>20</sup> substance use disorders,<sup>21</sup> eating disorders,<sup>22</sup> and patient populations with mixed diagnoses.<sup>23-25</sup> PH programs first emerged in the 1970s as an alternative method to deliver long-term comprehensive psychosocial treatment with greater flexibility and reduced cost compared with previously favored inpatient treatment methods.<sup>26-28</sup> PH treatment generally consisted of long-term, generic, psychosocial group therapy until the 1990s, when the emergence of CBT and the burgeoning dominance of managed care coalesced. Consequently, over the past two decades, the propelling factor underlying treatment in PH programs have been a demand for shorter treatment with evidence for its effectiveness, which has been reflected in the literature on PH treatment that emerged concurrently.<sup>29</sup> The demand for effective, short-term outpatient treatment resulted in a natural pairing of CBT and PH.<sup>30</sup>

The ability to treat patients with diverse diagnoses in a PH setting is paramount, given the high rate of patients who present with comorbid, multi-axial diagnoses. However, given the ubiquity of mood disorders and generic depressive symptomatology among patients with acute mental illness, it is important that the PH be particularly successful in treating these disorders. To date, very few studies have documented the effectiveness of mood disorder treatment in the PH setting. Although Mazza and colleagues<sup>31</sup> reported a significant reduction in symptoms as well as overall improvements in functioning and social adaptation among patients with a mood disorder being treated in a PH setting, it remains unclear which components of CBT for mood disorders may be more predictive of successful treatment outcome in this context.

## Objective

In the current study, we sought to replicate and expand on available research by examining predictors of treatment response among patients with a mood disorder receiving intensive CBT-oriented treatment in a short-term PH setting. Specifically, we were interested in whether enhanced behavioral activation and reductions in negative thinking were predictive of patients' level of depression and general psychological distress at discharge.

## Methods

### Sample

The institutional review board of McLean Hospital approved all research procedures prior to data collection. Patients who were referred to the Behavioral Health Partial Hospital Program (BHP) were informed about this study during their intake interview with a clinician. All patients who were admitted to the BHP were eligible to participate in an ongoing, naturalistic study (i.e., there were no exclusion criteria) on program effectiveness (see program description below). Data from the overall study sample have yet to be analyzed and published, although preliminary results on the effectiveness of this treatment program among a small sample ( $n = 57$ ) from this data set have been previously published.<sup>24</sup> Patients from the overall sample were only included in the study described here if they met criteria for a mood disorder. All patients who agreed to participate gave written informed consent.

### Assessments

During the admission process, all participants met with a clinician who assessed for Axis I-V diagnoses using a semi-structured interview based on DSM-IV-TR<sup>32</sup> criteria. Participants also completed self-report inventories that assessed psychological distress, depressive symptomatology, negative cognitions, and behavioral activation. The Brief

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Symptom Inventory (BSI)<sup>33</sup> was used to assess psychological distress. Several scores can be calculated from the BSI; this study used the Global Severity Index (GSI), scores on which range from 0 to 4, with higher scores indicating greater overall psychological distress. The Beck Depression Inventory–II (BDI-II)<sup>34</sup> was used to assess depressive symptomology. Possible scores on the BDI-II range from 0 to 63, with higher scores indicating greater depressive symptomology. The Automatic Thoughts Questionnaire (ATQ)<sup>35</sup> was used to assess negative cognitions. Possible scores on the ATQ range from 30 to 150, with higher scores indicating stronger negative cognitive self-statements. Finally, behavioral activation was assessed with the Behavioral Activation for Depression Scale (BADs).<sup>36</sup> Possible scores on the BADs range from 0 to 150, with higher scores indicating increased behavioral activation. All four measures have been shown to have adequate reliability and validity. Participants completed all four self-report measures at admission and discharge.

#### *Behavioral Health Partial Program (BHP) Treatment*

The BHP is a CBT-oriented PH program that offers intensive, short-term treatment for patients with a variety of Axis I and II disorders. The vast majority of patients seen in the BHP (approximately 80%) have managed care insurance, while a small proportion has public entitlement insurance. Approximately 60% of patients are stepped-down from inpatient treatment, with the remainder being direct admissions to PH. The BHP admits approximately 50 patients per month (600 annually), with an average of approximately 30 patients in treatment on a given day. The median length of stay in the program is 2 weeks. The program is open Mondays through Fridays, with the hospital and local emergency rooms providing emergency backup.

BHP patients are assigned a case manager who coordinates all aspects of treatment in conjunction with a program psychiatrist who also provides medication management. Treatment includes groups and individual psychotherapy. In this high intensity PH, patients attend approximately 12-20 groups weekly plus several individual meetings for case management, individual skills training, functional assessments, and vocational rehabilitation. A written treatment contract,<sup>37</sup> which is reviewed weekly with a case manager and discussed in a group format, promotes focus and collaboration between patient and staff. Family interventions (e.g., psychoeducational meetings) and support are also incorporated into the treatment and aftercare.

The BHP integrates clinical service with a significant training function for psychologists and psychiatrists. Clinical psychology pre-doctoral interns, post-doctoral fellows, and psychiatry residents both lead groups and provide individual skills training (psychologists and Bachelor-level clinicians also co-lead groups). Training emphasizes learning and providing diagnosis-specific or otherwise specialized group and individual therapies, primarily CBT and other evidence-based treatments (e.g., DBT).

The BHP treatment approach is based on a set of fixed values and flexible adaptations described in detail elsewhere.<sup>29</sup> The overall focus is on teaching patients skills related to self-assessment, behavioral coping, and developing effective communication strategies. It is designed as a two-stage model, corresponding to a 2-week treatment time frame, with specific interventions and objectives for each stage. In the first stage of treatment, the patient learns to identify triggers and warning signs of their disorder, to utilize cognitive restructuring, to begin self-scheduling and behavioral activation, and to develop interpersonal communication through group participation, with an emphasis on remaining connected to others during periods of distress. In the second phase of treatment, patients develop a relapse prevention plan, a crisis plan, and a transition plan for returning to work, school, or other pre-hospitalization environment.

Treatment interventions are based on psychoeducation and skills training. Psychoeducation provides accurate information about diagnosis, treatment, and risk factors;<sup>38</sup> we also believe it enhances a patient's sense of control and ability to make decisions about treatment and life issues. Skills training interventions are adapted from evidence-based CBT treatments by distilling core concepts and skills for various diagnostic groups, including mood disorders.<sup>6,39</sup> Two general areas of skills are targeted: self-assessment and behavioral coping. Self-assessment skills create a framework from which a patient can identify realistic priorities for treatment and begin to challenge maladaptive self-cognitions. Self-assessment skills include chain analysis (e.g., a sequential analysis), which can be applied in a global way to the sequence of events leading to admission or more specifically in cognitive restructuring and relapse prevention to help the patient anticipate problems and find healthy alternatives. Behavioral coping skills

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include behavioral scheduling (i.e., structuring one's time) and behavioral activation, which have robust empirical support for treatment of depression.<sup>9,14</sup> Behavioral coping is also integrated with interpersonal skills training to address social isolation and to help prevent relapse.

### *Statistical Analysis*

To assess general treatment effectiveness, we examined changes in the ATQ, BADS, BDI-II, and BSI from pre- to post-treatment using paired *t* tests. To determine whether enhanced behavioral activation (i.e., increase in BADS score) and reductions in negative thinking (i.e., decrease in ATQ score) were predictive of patients' level of depression (i.e., BDI-II score) and general psychological distress (i.e., BSI score) at discharge, residualized change scores were created by regressing post-treatment BADS and ATQ scores onto pre-treatment BADS and ATQ scores. The residualized change scores can be interpreted as the amount of increase or decrease in the variable over treatment that was independent of baseline levels. The ATQ and BADS residualized change scores were entered as predictors of post-treatment BSI and BDI-II scores in two hierarchical linear regression analyses after controlling for pre-treatment BSI and BDI-II scores.

## **Results**

A total of 105 patients with a mood disorder were enrolled in this study. Primary diagnoses of the sample were 79% ( $n = 83$ ) major depressive disorder, 13% ( $n = 14$ ) bipolar I disorder, 5% ( $n = 5$ ) bipolar II disorder, and 3% ( $n = 3$ ) dysthymic disorder. The majority of participants met criteria for several comorbid psychiatric disorders. Demographic and clinical characteristics of the sample are shown in Table 1. The mean length of treatment among the sample was 9 days.

All measures indicated a trend toward increasing wellness from pre-treatment to post-treatment. As expected, BSI, BDI-II, and ATQ scores decreased significantly and BADS scores increased significantly at the post-treatment assessment (see Table 2). In the first hierarchical linear regression, post-treatment BSI scores were treated as the dependent measure predicted by their associated pre-treatment scores in the first step, and in the second step by residualized change scores for the ATQ and BADS. After partialling out variance in post-treatment BSI associated with pre-treatment BSI, the remaining variance was predictable by change in ATQ ( $\beta = .59, p < .001$ ), but not BADS ( $\beta = -.09, p > .05$ ). Therefore, decreased negative thinking, but not increased behavioral activation, was associated with lower distress symptoms at post-treatment. Using the same hierarchical linear regression procedure for post-treatment BDI-II, after partialling out variance associated with pre-treatment BDI-II, the remaining variance was predictable by change in ATQ ( $\beta = .57, p < .001$ ) and BADS ( $\beta = -.21, p < .01$ ). Both decreased negative thinking increased behavioral activation were associated with lower depression symptoms at post-treatment (see Table 3).

## **Discussion**

### *Summary of Key Findings*

In this study, we were interested in examining whether changes in automatic thoughts and behavioral activation predicted patients' overall reports of both depression and general psychological distress in an intensive CBT-oriented PH program. Findings from past research that has examined CBT treatment of mood disorders have yielded inconsistent results, with some studies noting the importance of behavioral activation<sup>9,14</sup> and others highlighting the importance of improvements in negative cognitions.<sup>10–13</sup>

To help extend our understanding of these factors, we conducted two hierarchical linear regressions to examine whether changes in negative thinking and behavioral activation accounted for independent variance in patients' reported depression and general psychological distress at discharge. Our results indicated that both factors accounted for patients' reports of depressive symptoms after approximately 2 weeks of treatment. However, only change in negative cognitions was predictive of general psychological distress at discharge.

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The finding that only decreased negative thinking was associated with improvement in both depression and general psychological distress at discharge is noteworthy for several reasons. First, this result provides support for the discriminant validity of the BADS, which was designed to assess increases in behavioral activation related to the treatment of depression, not general distress.<sup>36</sup> Second, this finding supports the independent contribution of improvement in negative cognitions as a unique predictor of patient improvement in depression and general psychological distress among patients with a mood disorder in an intensive CBT-oriented PH setting. Given that patients in PH treatment often present with multiple psychiatric diagnoses, it is important to identify improvements in specific domains (i.e., negative cognitions) that can have a broad impact on patient improvement. Consistent with previous research,<sup>15,16,40,41</sup> changes in automatic thoughts may provide initial symptom relief and set the stage for later behavioral change in CBT treatment of mood disorders. It would be useful for future research to incorporate both change in automatic thoughts and behavioral activation in an experimental study using a sequential design to further understand this complicated model of change. Additionally, although both improvement in negative thinking and behavioral activation were predictive of decreased depressive symptoms, a more rigorous design (i.e., randomized clinical trial) is needed to determine the unique causal roles of these predictors in treatment success.

### *Limitations*

There are several limitations to this study. First, as noted above, the use of a pre-post study design instead of a randomized controlled trial prohibits conclusions of causation being drawn from these findings. Second, we did not follow patients post-discharge. Therefore, it is not clear whether changes in patients' behaviors and cognitions were sustained over time. Third, although clinical experts (e.g., psychiatrists and psychologists) determined each patient's clinical diagnosis, we did not use a standardized assessment tool. Given the importance of understanding the complicated clinical profile of patients being treated in a PH program, future research should include standardized clinical assessments to help ensure diagnostic accuracy. Fourth, other potential predictors of post-treatment symptoms (e.g., treatment motivation) were not included in the regression models. Including other possible predictors of post-treatment symptoms would have provided a more stringent test of the associations between the variables included in the analyses. Finally, although we were able to observe changes in patients' depressive symptoms and general levels of psychological distress from admission to discharge, we did not assess whether patients showed improvement in other functional areas, such as satisfaction with life, in response to CBT interventions. Future research should therefore include measures of functional improvement in order to increase our understanding of ways in which changes in negative thoughts and behavioral activation may affect treatment outcomes.

### *Clinical Implications*

Although randomized controlled trials are essential for making causal inferences, we believe that empirically supported mental health treatment interventions need to be assessed in a real-world clinical context using naturalistic designs for at least two reasons. First, if we can identify specific interventions that influence an identified outcome, we are in a better position to provide targeted treatment interventions that match our patients' specific needs. Given the trend toward briefer treatment, matching a patient's needs with interventions is a critical first step to achieving good outcomes. Second, although efficacy studies provide empirical support for employing specific treatment interventions for particular disorders in controlled research environments, a growing number of researchers have stressed the importance of evaluating whether empirically supported treatments are effective in actual clinical contexts, so that clinicians can provide evidence to support their treatment choices.<sup>42-44</sup> Several models have illustrated how a complementary cycle of research and practice can be integrated using efficacy and effectiveness research.<sup>45,46</sup> Our study provides an initial step toward better understanding the ways in which adapted empirically supported interventions function in a PH setting.

### **Conclusions**

Despite the limitations described above, the findings presented here provide compelling support for the importance of targeting patients' maladaptive thoughts and behaviors in facilitating improvement in an intensive PH context. From a public health standpoint, such findings are critical for identifying the potential mechanisms of change in treatment and can subsequently help guide future interventions to accommodate the growing need to effectively treat patients in intensive short-term clinical settings.

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Table 1. Demographic and clinical characteristics of the sample ( $N = 105$ ).

	$N$ or mean	%
Age (mean $\pm$ SD years)	37.19	13.55
Gender		
Male	32	30.5
Female	73	69.5
Education		
High school	6	5.7
Some college	56	53.3
College graduate	43	41.0
Marital status		
Never married	57	54.3
Currently married	26	24.8
Separated	5	4.8
Divorced	15	14.2
Widowed	2	1.9
Currently employed/student		
Yes	44	41.9
No	61	58.1
Current substance abuse		
Yes	42	40.0
No	63	60.0
Previous psychiatric hospitalizations		
None	37	35.2
One to five	57	54.3
Six or more	11	10.5
Payor		
Managed care/HMO	83	79.0
Medicare/Medicaid	16	15.2
Private pay	6	5.8
Primary co-morbid disorders*		
Anxiety	42	40.0
Personality	15	14.3
History of suicide attempt		
Yes	37	35.2
No	68	64.8

\*Does not total 100% and not mutually exclusive categories.

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Table 2. Pre-treatment and post-treatment BSI, BDI-II, ATQ, and BADS ( $N = 105$ )

	<i>M</i>		<i>SD</i>		<i>t</i> <sup>a</sup>	<i>d</i>
	Pre-	Post-	Pre-	Post-		
BSI	1.73	1.07	0.73	0.60	10.68	0.99
BDI-II	30.40	17.09	11.42	11.26	11.93	1.17
ATQ	99.26	70.02	27.38	25.51	11.36	1.11
BADS	67.00	96.29	25.22	25.06	-12.27	1.17

*Note.* BSI = Brief Symptom Inventory, BDI-II = Beck Depression Inventory-II, ATQ = Automatic Thoughts Questionnaire, BADS = Behavioral Activation for Depression Scale. <sup>a</sup> $p < .001$

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Table 3. Hierarchical multiple regression analyses predicting psychological distress and depression from automatic negative thoughts and behavioral activation ( $N = 105$ ).

<i>Variable</i>	<i>B</i>	<i>SE B</i>	$\beta$
Post-treatment BSI <sup>a</sup>			
Step 1			
Pre-treatment BSI	.47	.07	.56**
Step 2			
Pre-treatment BSI	.43	.04	.52**
Change in ATQ	.34	.04	.59**
Change in BADS	-.05	.04	-.09
Post-treatment BDI-II <sup>b</sup>			
Step 1			
Pre-treatment BDI-II	.48	.08	.49**
Step 2			
Pre-treatment BDI-II	.47	.05	.47**
Change in ATQ	6.26	.73	.57**
Change in BADS	-2.36	.75	-.21*

*Note.* BSI = Brief Symptom Inventory, BDI-II = Beck Depression Inventory-II, ATQ = Automatic Thoughts Questionnaire, BADS = Behavioral Activation for Depression Scale. <sup>a</sup>For Post-treatment BSI:  $R^2 = .32$  for Step 1;  $\Delta R^2 = .42$  for Step 2 ( $p < .001$ ). <sup>b</sup>For Post-treatment BDI-II:  $R^2 = .24$  for Step 1;  $\Delta R^2 = .54$  for Step 2 ( $p < .001$ ). \* $p < .01$ , \*\* $p < .001$ .