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Patient recall of specific cognitive therapy contents predicts adherence and outcome in adults with major depressive disorder

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ABSTRACT

The current study examined whether and which specific contents of patients' memory for cognitive therapy (CT) were associated with treatment adherence and outcome. Data were drawn from a pilot RCT of forty-eight depressed adults, who received either CT plus Memory Support Intervention (CT + Memory Support) or CT-as-usual. Patients' memory for treatment was measured using the Patient Recall Task and responses were coded into *cognitive behavioral therapy (CBT) codes*, such as CBT Model and Cognitive Restructuring, and *non-CBT codes*, such as individual coping strategies and no code. Treatment adherence was measured using therapist and patient ratings during treatment. Depression outcomes included treatment response, remission, and recurrence. Total number of CBT codes recalled was not significantly different comparing CT + Memory Support to CT-as-usual. Total CBT codes recalled were positively associated with adherence, while non-CBT codes recalled were negatively associated with adherence. Treatment responders (vs. non-responders) exhibited a significant increase in their recall of Cognitive Restructuring from session 7 to posttreatment. Greater recall of Cognitive Restructuring was marginally significantly associated with remission. Greater total number of CBT codes recalled (particularly CBT Model) was associated with non-recurrence of depression. Results highlight the important relationships between patients' memory for treatment and treatment adherence and outcome.

Converging evidence across disciplines suggests that patients have poor memory for the content of treatment, which negatively affects adherence to treatment recommendations and clinical outcome. The medical literature has documented poor patient recall for treatment recommendations and health behavior advice (e.g., Bober, Hoke, Duda, & Tung, 2007; Flocke & Stange, 2004; Jansen et al., 2008; Kravitz et al., 1993). Importantly, poor patient recall for medical information is associated with low adherence to treatment recommendations (e.g., Flocke & Stange, 2004; Kravitz et al., 1993; Pickney & Arnason, 2005; Tosteson et al., 2003; Vermeire, Hearnshaw, Van Royen, & Denekens, 2001) and suboptimal clinical outcomes (Bearden et al., 2006; Cohen, Forbes, Mann, & Blanchard, 2006; Martínez-Arán et al., 2004; Polak, Witteveen, Reitsma, & Olff, 2012).

A small but emerging literature has also documented that patient recall for the contents of evidence based psychological treatments such as cognitive behavioral therapy (CBT) is not optimal and can even be inaccurate. Although several studies have reported that worse baseline verbal memory functioning may be associated with poor treatment response to CBT (Nijdam, De Vries, Gersons, & Olff, 2015; Scott et al., 2017; Wild & Gur, 2008), only a few studies have documented a link between memory for psychological treatment contents and clinical outcome. Among individuals with chronic insomnia, recall of treatment recommendations in CBT for insomnia was around 13%–33% after completing the treatment, although in this study greater recall of treatment recommendations did not predict improvement in insomnia outcomes (Chambers, 1991). In a more recent study, patients' immediate recall of session contents was only 20–37% among individuals with comorbid bipolar disorder and insomnia receiving CBT for insomnia, and greater recall predicted better clinical outcome (Lee & Harvey, 2015). Another study showed that more than half of the thoughts about, and application of, treatment contents were inaccurate among depressed individuals during the week following a computer-delivered CBT learning module (Gumport, Williams, & Harvey, 2015). One goal of the current study is to add evidence to this emerging literature on patients' memory

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for psychological treatment contents.

These converging lines of research lead to the hypothesis that deriving strategies to improve patients' memory for treatment may be a novel pathway to improving treatment adherence and outcome. Indeed, a recent pilot randomized controlled trial (RCT) provided initial evidence supporting the use of Memory Support Intervention (MSI) as an adjunctive treatment to enhance patients' memory for treatment and to improve treatment outcome in the context of cognitive therapy (CT) for depression (Harvey et al., 2016). The current version of the MSI is comprised of eight memory support (MS) strategies, including attention recruitment, categorization, evaluation, application, repetition, practice remembering, cue-based reminders, and praise recall (for more detail see Supplemental Material A). These MS strategies are integrated into treatment-as-usual by treatment providers with the goal of enhancing patients' memory for treatment contents (Harvey et al., 2014, 2016). Note that the MSI is not intended to directly enhance patients' memory functioning per se. In this pilot study, MSI was integrated into standard CT for depression (CT + Memory Support) and was compared to standard CT (CT-as-usual). Results suggested that the MSI exerted promising effects on patient recall of treatment contents and treatment outcomes (Harvey et al., 2016).

In this emerging program of research, patients' memory for treatment is measured using the Patient Recall Task, a free recall task administered at mid-treatment (session 7), posttreatment, and 6-month follow-up (Lee & Harvey, 2015). In this task, participants are asked to list as many treatment points as they can remember from their therapy sessions and to indicate the treatment points from the most recent session. A treatment point is defined as "a main idea, principle, or experience that the treatment provider wants the patient to remember or implement as part of the treatment" (Lee & Harvey, 2015). Responses to this task (i.e., freely recalled treatment points) are then scored to obtain the total number of *distinct* treatment points recalled. To date, the total number of distinct treatment points recalled, regardless of the specific contents, have been examined in relation to the use of memory support, treatment adherence, and treatment outcome. Briefly, greater patient recall of cumulative treatment contents at mid-treatment was associated with better treatment adherence (Dong, Lee, & Harvey, 2017a) and greater recall of the most recent session was associated with clinical outcomes including treatment responses, remission, and recurrence (Harvey et al., 2016). However, the specific contents of patient recall have not been examined.

To address this gap, the current study examined the qualitative features of patient memory for treatment as well as their relationship to treatment adherence during treatment and outcome at posttreatment and 6-month follow-up. We used data from the NIMH-funded pilot RCT of adults with Major Depressive Disorder (MDD) receiving CT for depression, where participants were randomly allocated to receive 14 sessions of CT + Memory Support or CT-as-usual. Patients' memory for treatment was assessed using the Patient Recall Task at session 7, posttreatment, and 6-month follow-up. We manually coded all patients' written responses to the Patient Recall Task into specific CBT concepts and skills (*CBT codes*), which include: Behavioral Activation, CBT Model, Cognitive Restructuring, Self-Monitoring, Thinking Traps, other CBT techniques (e.g., relaxation, assertive communication, problem solving). These CBT codes were derived from standard treatment manuals of CT for depression and aim to capture treatment contents delivered in this pilot RCT. Patient recall responses that were inconsistent with the CBT contents were assigned *non-CBT codes*, including Individual Coping strategies and No Code. We then examined the relationships between these patient recall codes and treatment adherence and outcome.

This study has three aims. The first aim was to examine the effects of time (from session 7 to posttreatment and 6-month follow-up) and treatment condition on patient memory for treatment as indexed by the total number of *CBT codes* recalled (i.e., sum of all specific CBT codes recalled). We hypothesized that the total number of CBT codes recalled would be highest at posttreatment and that the CT + Memory Support condition would have greater total CBT codes than CT-as-usual. The second aim was to examine whether patient recall is associated with treatment adherence. We hypothesized that greater recall of CBT codes (i.e., Behavioral Activation, CBT Model, Cognitive Restructuring, Self-Monitoring, Thinking Traps, other CBT techniques) would be associated with better treatment adherence, and that greater recall of non-CBT codes (i.e., Individual Coping and No Code) would be associated with worse treatment adherence. The third aim was to examine whether patient recall is associated with depression outcome. We hypothesized that greater recall of CBT codes would be associated with better depression outcome (e.g., treatment response and remission at posttreatment, no recurrence at 6-month follow-up), whereas non-CBT codes would *not* be associated with depression outcome.

1. Methods

1.1. Participants

The participants were forty-eight adults who participated in a NIMH-funded randomized control trial for CT for depression. This study was approved by Committee for the Protection of Human Subjects at the University of California, Berkeley. Written informed consent was obtained and all participants gave this consent willingly. Details of the study are reported elsewhere (Harvey et al., 2016). Table 1 presents the demographic variables of the sample.

Participants were screened and selected via an in-person assessment. Participants were included in the study if they: (a) met diagnostic criteria for major depressive disorder (MDD), first episode, recurrent, or chronic, based on DSM-IV-TR criteria (American Psychiatric Association, 2000); (b) had a score that is equal to or higher than 24 on the Inventory of Depressive Symptomatology - Self Report (IDS-SR; Rush, Gullion, Basco, Jarrett, & Trivedi, 1996); (c) were older than 18 years old; (d) took no or stable medication that had a minimal effect on memory in the past eight weeks; and (e) were able and willing to provide written consent; (f) had an IQ equal to or above 80.

Exclusion criteria included (a) history of certain psychiatric disorders (i.e., bipolar affective disorder, psychosis, schizophrenia, schizophreniform disorder, schizoaffective disorder, delusional disorder, psychotic organic brain syndrome; antisocial, borderline, or schizotypal personality disorder), (b) diagnosis of current non-psychotic Axis I disorder, which is primary and requires treatment not from the present study; (c) substance dependence in the past six months; (d) evidence of any medical disorder or condition that could be a causal factor for depression onset or stopping treatment; (h) current suicidal risk sufficient to preclude participation in cognitive behavioral therapy.

1.2. Study procedures

After assessment of eligibility, patients were randomized to either cognitive therapy with memory support (CT + Memory Support) or cognitive therapy as usual (CT-as-usual). Participants in both conditions received individual 60-min treatment sessions for 14 weeks with a therapist holding a master's or doctoral degree in psychology. Each treatment session was videotaped. Therapists in both conditions followed an identical protocol and handouts used were of the same quality and quantity. The only exception was that