Learning cognitive behavior therapy

Nicole B. Gumport [a], Joseph J. Williams [b], Allison G. Harvey [a, *]

[a] Department of Psychology, University of California, Berkeley, 3210 Tolman Hall #1650, Berkeley, CA, 94720-1650, USA
[b] Graduate School of Education, Stanford University, Stanford, CA, 94305, USA

ABSTRACT

Background and objectives: Progress toward establishing treatments for mental disorders has been good, particularly for cognitive behavior therapy (CBT). However, there is considerable room for improvement. The goal of this study was to begin the process of investigating the potential for improving treatment outcome via improving our understanding of learning processes.
Methods: Individuals diagnosed with major depressive disorder (N = 20) participated in three computer-delivered CBT lessons for depression. Indices of learning were taken after each lesson, during three phone calls over the week following the lesson, and one week later. These were: (a) whether the participant *thought* about the lesson, (b) whether the participant *applied* the lesson, and (c) whether the participant *generalized* the lesson. Based on a predetermined list of therapy points (i.e., distinct ideas and principles), all participant responses were coded for the number of therapy points they thought about, applied, or generalized following each lesson.
Results: Less than half of the thoughts and applications were accurate. Generalization, but not thoughts nor application, was associated with improved depression scores one week later.
Limitations: The follow up period was only one week later and there was no comparison group so we cannot speak to the long term outcome of these measures or generalize to other mental disorders.
Conclusions: These results point to the importance of improving transfer of learning in CBT and represent a promising first step toward the development of methods to study and optimize learning of CBT so as to improve patient outcomes.

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1. Introduction

Progress toward establishing cognitive behavioral treatments (CBT) for most mental disorders has been good (Layard & Clark, 2014). However, the effect sizes can be small to moderate, gains may not persist, and there are patients who derive little or no benefit (Lambert, 2011; Rey, Marin, & Silverman, 2011; Vittengl, Clark, Dunn, & Jarrett, 2007).

We propose to investigate a possible novel pathway to improving treatment outcome via improving our understanding of learning processes in the context of a CBT session. There is good reason to believe that learning from a CBT treatment session is non-optimal. Indeed, cognitive psychologists have demonstrated that the odds are really stacked against learning, applying and generalizing new knowledge in the context of formal instruction. This is

the transfer of learning problem (Detterman & Sternberg, 1993; Gick & Holyoak, 1983; Thorndike, 1932). People are often able to encode, recall, and recognize information, but there are multiple empirical demonstrations that people largely fail to apply the material that was learned in similar situations that differ only in surface features (Day & Goldstone, 2012; Gick & Holyoak, 1983). While we know that learning in the context of therapy can be improved by applying basic lessons from cognitive psychology (Harvey et al., 2014), fostering successful transfer is far from trivial and is an ongoing topic of research (e.g., Andersson, Carlbring, Furmark, & Group, 2012; Leberman, McDonald, & Doyle, 2006; Mestre, 2005; Rohrer, Taylor, & Sholar, 2010; Scogin, Jamison, Floyd, & Chaplin, 1998). In the present study, we seek to document the extent to which the material covered in a CBT session is thought about, applied and generalized to situations outside the session.

Our rationale for focusing on major depressive disorder is that depression is one of the most prevalent disorders and a leading cause of disability worldwide (World Health Organization, 2004). A

significant proportion of patients don't recover (Judd et al., 2000; Solomon et al., 2000). Of those who do recover, the majority relapse (Solomon et al., 2000). Hence, there is a need for innovation focused on improving treatment for depression. Also, depression is characterized by neuropsychological impairments, such as memory and attention (Behnken et al., 2010; Campbell & MacQueen, 2004; MacQueen et al., 2003; Videbech & Ravnkilde, 2004), and these are associated with poorer outcome (Majer et al., 2004). Hence, depression is a good candidate for studying processes of learning CBT.

We focus on computer-delivered CBT for depression as it has been well studied and enables careful experimental control of the content provided relative to therapist-delivered CBT. Moreover, there is evidence that computerized CBT for depression can reduce symptoms of depression in both efficacy and effectiveness trials with medium to large effect sizes (Andersson & Cuijpers, 2009; Andrews, Cuijpers, Craske, McEvoy, & Titov, 2010), even 6 or more months following treatment (Andersson et al., 2005; Andersson, Hesser, Hummerdal, Bergman-Nordgren, & Carlbring, 2013; Andrews et al., 2010; Spek et al., 2008). Computer-delivered CBT is also acceptable to patients (Andrews et al., 2010) and patients receiving computerized therapy also adhere to treatment recommendations just as much as patients in in-person therapy (van Ballegooijen et al., 2014). Despite these impressive outcomes, there is room to optimize these programs. Computer-delivered CBT for depression has high dropout rates (Andersson et al., 2005; Andersson & Cuijpers, 2009), although these are lower in therapist-guided computer-based treatments than in unguided treatments (Andersson, 2014). However, computer-delivered CBT modules are well suited for dissemination and can help close the gap between research and practice (Kazdin & Blase, 2011) since they cost less than standard treatment and allow for a consistent standard of content provided (McCrone et al., 2004; Proudfoot, 2004). Hence, computer-delivered CBT is a good platform for studying the learning of CBT.

The present study was designed to begin the process of investigating learning across three computer-delivered CBT lessons for depression. We included an assessment of three indices of learning: (a) whether the participant *thought* about the CBT lesson, (b) whether the participant *applied* the CBT lesson and (c) whether the participant *generalized* the CBT lesson. The first aim was to document the proportion of participants who displayed each of the three indices of learning. The hypothesis tested was that transfer of learning of the CBT lessons would be poor. The second aim was to investigate the association between the three indices of learning and depression scores one week later. The hypothesis tested was that participants who exhibited better learning would also exhibit reduced depression symptomatology one week later.

2. Method

2.1. Participants

Consecutive participants were twenty adults (ages 22–66) who met diagnostic criteria for major depressive disorder. Participant characteristics are presented in Table 1. Participants were recruited through internet advertisements, newspaper advertisements, and flyers distributed to businesses and psychiatric clinics in the community. Potential participants were invited to participate in a study "testing out a new brief computerized cognitive behavior therapy program to improve the symptoms of depression."

The inclusion criteria were: (1) a diagnosis of major depressive disorder, first episode, recurrent or chronic, according to DSM-IV-TR criteria (American Psychiatric Association, 2000), (2) a score of 24 or above on the Inventory of Depressive Symptomatology – Clinician Rated (IDS-C) (Rush, Gullion, Basco, Jarrett, & Trivedi,

Table 1
Demographic characteristics.

	N	%
Gender		
Male	6	30
Female	14	70
Race		
White	14	70
Asian	3	15
Black	1	5
Not Specified	2	10
Ethnicity		
Hispanic	5	25
Non-Hispanic	15	75
Marital Status		
Single	13	65
Married	4	20
Divorced	3	15
Employment		
Full-time	5	25
Part-time	7	35
Unemployed	7	35
Retired	1	5
Income		
<$20,000	7	35
$20,000–$35,000	3	15
$35,000–$50,000	3	15
$65,000+	4	20
Refused/Did not know	3	15
Comorbidity, Medical	7	35
Comorbidity, Psychiatric	15	75
Mood Medication	4	25
	M	SD
Age (years)	41.65	14.00
Education (years)	15.97	2.42

Note. M = Mean; *SD =* Standard Deviation.

1996), (3) a score of 26 or above on the Inventory of Depressive Symptomatology – Self-Rated (IDS-SR) (Rush et al., 1996), (4) medications taken for mood, if any, must have been stable for the past four weeks, (5) 18 years of age or older, and (6) able and willing to give informed consent.

The exclusion criteria were: (1) a history of bipolar disorder, (2) a history of psychosis (including schizophrenia, schizophreniform disorder, schizoaffective disorder, delusional disorder, or psychotic organic brain syndrome), (3) current non-psychotic Axis I disorder if it constitutes the principal diagnosis and if it required independent treatment (including anxiety disorders such as active PTSD, somatoform disorders, dissociative disorders, or eating disorders, etc.), (4) history of substance dependence in the past six months, (5) IQ below 80, (6) evidence of any medical disorder or condition that could cause depression or preclude participation in CBT (e.g., congestive heart failure, cancer, COPD, hepatitis C, chronic pain), and (7) current suicide risk sufficient to preclude treatment on an outpatient basis.

2.2. Procedure

All procedures were approved by the University of California, Berkeley, Committee for the Protection of Human Subjects. All participants provided written informed consent and received financial compensation for their participation ($100–$132).

A telephone interview was completed to screen for eligibility (N = 136). Individuals who were considered likely to be eligible based on the initial telephone screen (N = 22) were invited for a clinical evaluation involving the administration of the Structured Clinical Interview for DSM-IV (SCID) and the Inventory of Depression Symptomatology – Self-Rated (IDS-SR).