

Computer-Based Cognitive Behavioral Therapy, Beating the Blues

Computer-Based Cognitive Behavioral Therapy, Beating the Blues (BtB), is a computer-delivered series of cognitive behavioral therapy sessions for adults with mild to moderate depression and/or anxiety, as determined by an outpatient screening using a standardized instrument. BtB is based on the concept that changing one's thoughts changes one's feelings and behaviors as well. Delivered online in eight personalized 50-minute sessions accessed about weekly, the intervention teaches cognitive and behavioral strategies. During early sessions, clients learn about depression and anxiety and how to identify their own symptoms, and they set goals for therapy. In the following sessions, clients learn how to identify and change their thoughts, inner beliefs, and attributional styles (ways for explaining the causes of an event or behavior) that are exacerbating their problems. Throughout the sessions, a number of interactive multimedia techniques are used, most notably video vignettes that depict individuals modeling the session content. In addition, clients select behavioral techniques (e.g., activity scheduling, problem solving, sleep management) to apply to their problems. The online system administers demographic and evaluation questionnaires; provides the client with printable notes and worksheets throughout sessions; generates homework assignments for practicing new skills and assesses how assignments have been carried out; and sends clients a session review email after each session that describes the content covered, projects for the week, and the content to be addressed in the next session.

A clinician is needed only to screen clients for depression and/or anxiety and provide them with a referral to BtB or access to the online system. Implementation of BtB can also include use of a clinical helper who sets clients up in the system, tracks client progress, and provides support and encouragement to clients through regularly scheduled phone calls. In the study reviewed, assistance with the system was provided and progress was tracked, but no telephone support was provided.

Descriptive Information

Areas of Interest	Mental health treatment
Outcomes	Review Date: September 2012 1: Depression 2: Anxiety
Outcome Categories	Mental health
Ages	18-25 (Young adult) 26-55 (Adult) 55+ (Older adult)
Genders	Male Female
Races/Ethnicities	Non-U.S. population
Settings	Outpatient
Geographic Locations	Urban Suburban
Implementation History	The intervention has been used for over 12 years in the United Kingdom as part of the country's National Health Service-approved treatment for depression and anxiety. In the United States, it was first used in 2011 in a large health system in Pennsylvania. Approximately 200 sites in Australia, Ireland, New Zealand, the Netherlands, the United Kingdom, and the United States are using BtB currently. Numerous studies document the use of BtB in primary care, secondary care, and mental health practices; by community teams; and in higher education. There are published studies about U.S. implementations, and a large study on BtB in a primary care setting began in 2012.

NIH Funding/CER Studies	Partially/fully funded by National Institutes of Health: No Evaluated in comparative effectiveness research studies: No
Adaptations	No population- or culture-specific adaptations of the intervention were identified by the developer.
Adverse Effects	No adverse effects, concerns, or unintended consequences were identified by the developer.
IOM Prevention Categories	IOM prevention categories are not applicable.


Quality of Research

Review Date: September 2012

Documents Reviewed

The documents below were reviewed for Quality of Research. The research point of contact can provide information regarding the studies reviewed and the availability of additional materials, including those from more recent studies that may have been conducted.


Study 1

[Proudfoot, J., Goldberg, D., Mann, A., Everitt, B., Marks, I., & Gray, J. A. \(2003\). Computerized, interactive, multimedia cognitive-behavioral program for anxiety and depression in general practice. *Psychological Medicine*, 33\(2\), 217-227.](#) 

Supplementary Materials

[Beck, A. T., Epstein, N., Brown, G., & Steer, R. A. \(1988\). An inventory for measuring clinical anxiety: Psychometric properties. *Journal of Consulting and Clinical Psychology*, 56\(6\), 893-897.](#) 

Beck, A. T., Steer, R. A., & Garbin, M. C. (1988). Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. *Clinical Psychology Review*, 8, 77-100.

[Beck, A. T., Ward, C. H., Mendelson, M., Mock, J., & Erbaugh, J. \(1961\). An inventory for measuring depression. *Archives of General Psychiatry*, 4, 561-571.](#) 

Steer, R. A., Ranieri, W. F., Beck, A. T., & Clark, D. A. (1993). Further evidence for the validity of the Beck Anxiety Inventory with psychiatric outpatients. *Journal of Anxiety Disorders*, 7, 195-205.

Outcomes

Outcome 1: Depression	
Description of Measures	Depression was measured using the Beck Depression Inventory, 2nd Edition (BDI-II), a 21-item, self-report instrument that assesses the severity of depression symptoms over the past 2 weeks according to DSM-IV criteria. For each item, there is a list of statements reflecting different levels of severity of the same depression symptom (e.g., sense of failure, pessimism, self-hate), and respondents select the statement that best reflects their feelings or behavior. The ratings associated with each selected statement (0 to 3) are summed for a total score ranging from 0 to 63, with higher scores representing greater levels of depression. Assessments occurred at pretest, posttest (after 2 months of BtB), and 1-, 3-, and 6-month follow-up.
Key Findings	In a study conducted in England, primary care patients with depression and/or anxiety were randomly assigned to the intervention group or a treatment as usual control group. Treatment as usual included pharmacotherapy, general support and practical or social help from the primary care provider, and face-to-face counseling or psychological intervention. The intervention group received BtB in the primary care provider's office and the same support offered the control group with the exception of face-to-face counseling or psychological intervention. From pre- to posttest, the intervention group had a greater decrease in scores on the BDI than the control group ($p < .05$), regardless of use of concomitant pharmacotherapy, duration of current episode (more than 6 months vs. 6 months or less), or baseline severity of depression. This difference was maintained through 6-month follow-up.
Studies Measuring Outcome	Study 1
Study Designs	Experimental
Quality of Research Rating	3.0 (0.0-4.0 scale)

Outcome 2: Anxiety

Description of Measures	Anxiety was measured using the Beck Anxiety Inventory (BAI), a 21-item, self-report instrument that assesses the severity of anxiety symptoms. For each item, respondents rate the severity of a symptom using a 4-point scale from 0 ("not at all") to 3 ("severely--I could barely stand it"). Some items address somatic symptoms (e.g., numbness, wobbliness, feeling hot), and others address cognitions associated with the subjective aspects of anxiety and panic (e.g., unable to relax, fear of losing control, scared). The ratings for each item are summed for a total score ranging from 0 to 63, with higher scores representing greater levels of anxiety. Assessments occurred at pretest, posttest (after 2 months of treatment), and 1-, 3-, and 6-month follow-up.
Key Findings	In a study conducted in England, primary care patients with depression and/or anxiety were randomly assigned to the intervention group or a treatment as usual control group. Treatment as usual included pharmacotherapy, general support and practical or social help from the primary care provider, and face-to-face counseling or psychological intervention. The intervention group received BtB in the primary care provider's office and the same support offered the control group with the exception of face-to-face counseling or psychological intervention. From pre- to posttest, the intervention group had a greater decrease in scores on the BAI than the control group ($p < .05$), regardless of use of concomitant pharmacotherapy, duration of current episode (more than 6 months vs. 6 months or less), or baseline severity of depression. This difference was maintained through 6-month follow-up.
Studies Measuring Outcome	Study 1
Study Designs	Experimental
Quality of Research Rating	3.0 (0.0-4.0 scale)

Study Populations

The following populations were identified in the studies reviewed for Quality of Research.

Study	Age	Gender	Race/Ethnicity
Study 1	18-25 (Young adult) 26-55 (Adult) 55+ (Older adult)	73.7% Female 26.3% Male	100% Non-U.S. population

Quality of Research Ratings by Criteria (0.0-4.0 scale)

External reviewers independently evaluate the Quality of Research for an intervention's reported results using six criteria:

1. Reliability of measures
2. Validity of measures
3. Intervention fidelity
4. Missing data and attrition
5. Potential confounding variables
6. Appropriateness of analysis

For more information about these criteria and the meaning of the ratings, see [Quality of Research](#).

Outcome	Reliability of Measures	Validity of Measures	Fidelity	Missing Data/Attrition	Confounding Variables	Data Analysis	Overall Rating
1: Depression	4.0	4.0	2.1	1.6	2.9	3.5	3.0
2: Anxiety	4.0	4.0	2.1	1.6	2.9	3.5	3.0

Study Strengths

The outcome measures used in the study have excellent psychometric properties and are gold standard instruments. The automated

nature of the lessons reviewed the fidelity of the treatment provided to the intervention group. Attrition and missing data were similar between the treatment and control groups. Reasons for loss to follow-up were tracked and reported. Randomization appears to have controlled for many potential confounding variables. All analyses were appropriate and included mixed effects regression models, covariates, and intent-to-treat analysis.

Study Weaknesses

Although the computerized program tracked intervention completion and homework assignments, no specific data were reported regarding participants' completion of the entire intervention. Attrition and missing data were concerns based on the loss of subjects between random assignment to treatment condition and pre-test and the large percentage of participants who were lost to follow-up, with nearly all of those who were not retained being lost by 1-month follow-up. Attrition and missing data were not addressed in the analyses. Because primary care staff were not blinded to treatment condition, their clinical work with participants may have been affected, a potential study confound.

Readiness for Dissemination

Review Date: September 2012

Materials Reviewed

The materials below were reviewed for Readiness for Dissemination. The implementation point of contact can provide information regarding implementation of the intervention and the availability of additional, updated, or new materials.

Program Web site, <http://www.beatingthebluesus.com/>

U Squared Interactive. (2011). Beating the BluesUS: Online version administrator manual. Pittsburgh, PA: Author.

U Squared Interactive. (n.d.). Beating the BluesUS: Training workbook. Pittsburgh, PA: Author.

Readiness for Dissemination Ratings by Criteria (0.0-4.0 scale)

External reviewers independently evaluate the intervention's Readiness for Dissemination using three criteria:

1. Availability of implementation materials
2. Availability of training and support resources
3. Availability of quality assurance procedures

For more information about these criteria and the meaning of the ratings, see [Readiness for Dissemination](#).

Implementation Materials	Training and Support Resources	Quality Assurance Procedures	Overall Rating
3.7	3.9	3.9	3.8

Dissemination Strengths

The Web-based program is easily accessible to clients and can be completed on most computers with an Internet connection and a printer. The program uses a variety of multimedia resources including videos of clients; interactive tools such as a risk assessment, symptom tracker, and goal tracker; and printable homework assignments. The administrator manual provides guidance to organizations on the set-up and use of the program. An unlimited number of clients can use the online program at one time, and the program automatically sends out reminder emails to clients who have not logged into the system each week to complete a session. Organizations may choose to have a staff member trained as a clinical helper to provide additional support to clients over the course of the program. The training workbook for clinical helpers provides guidance on how to support clients as they progress through program sessions and how to maintain client confidentiality. Initial training for administrators and clinical helpers (if applicable) is required for new implementation sites; the training approach follows the perspective of a client moving through each of the sessions. Free telephone technical assistance is available at any time. The automated nature of the program strengthens implementation fidelity. The program limits client access such that sessions must be completed in sequential order. The clinical measures built into the online program support ongoing monitoring of client outcomes. Administrators have access to individual client progress reports and an overall program summary to evaluate program implementation.

Dissemination Weaknesses

The program Web site contains limited implementation information for interested organizations. It is unclear how organizations can provide feedback to the developer for program improvement.

Costs

The cost information below was provided by the developer. Although this cost information may have been updated by the developer since the time of review, it may not reflect the current costs or availability of items (including newly developed or discontinued items). The implementation point of contact can provide current information and discuss implementation requirements.

Item Description	Cost	Required by Developer
Code for accessing online treatment sessions	Cost varies: <ul style="list-style-type: none"> • \$0.06-\$0.25 per client per month, depending on number of clients, or • \$30-\$150 per treatment, depending on number of treatments 	Yes
1-day, on-site training for clinical helpers and administrators	\$5,000, plus travel expenses	Yes
Telephone technical assistance	Free	No

Replications

Selected citations are presented below. An asterisk indicates that the document was reviewed for Quality of Research.

[Cavanagh, K., Shapiro, D. A., Van Den Berg, S., Swain, S., Barkham, M., & Proudfoot, J. \(2006\). The effectiveness of computerized cognitive behavioural therapy in routine care. *British Journal of Clinical Psychology*, 45\(4\), 499-514. !\[\]\(bd1a142de767a21e5362c595f844a4ff_img.jpg\)](#)

Learmonth, D., & Rai, S. (2007). Establishing the effectiveness of computerised cognitive behavioural therapy for secondary/tertiary mental health care service users with and without physical co-morbidities. *Health Psychology Update*, 16(3), 42-48.

[Learmonth, D., & Rai, S. \(2008\). Taking computerized CBT beyond primary care. *British Journal of Clinical Psychology*, 47\(1\), 111-118. !\[\]\(74d4806277d7e73349d8e8c0897931e9_img.jpg\)](#)

Learmonth, D., Trosh, J., Rai, S., Sewell, J., & Cavanagh, K. (2008). The role of computer-aided psychotherapy within an NHS CBT specialist service. *Counselling and Psychotherapy Research*, 8(2), 117-123.

[McCrone, P., Knapp, M., Proudfoot, J., Ryden, C., Cavanagh, K., Shapiro, D. A., et al. \(2004\). Cost-effectiveness of computerised cognitive-behavioural therapy for anxiety and depression in primary care: Randomised controlled trial. *British Journal of Psychiatry*, 185, 55-62. !\[\]\(830769b31eeeaca920791081939ff8ba_img.jpg\)](#)

Mitchell, N., & Dunn, K. (2007). Pragmatic evaluation of the viability of CCBT self-help for depression in higher education. *Counselling and Psychotherapy Research*, 7(3), 144-150.

[Van Den Berg, S., Shapiro, D. A., Bickerstaffe, D., & Cavanagh, K. \(2004\). Computerized cognitive-behaviour therapy for anxiety and depression: A practical solution to the shortage of trained therapists. *Journal of Psychiatric and Mental Health Nursing*, 11\(5\), 508-513. !\[\]\(8bba887393ca45b761e5cb49e755e762_img.jpg\)](#)

Contact Information

To learn more about implementation or research, contact:

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Consider these [Questions to Ask](#) (PDF, 54KB) as you explore the possible use of this intervention.

Web Site(s):

- <http://www.beatingthebluesus.com>
- http://u2interactive.com/b_over.html