University of Louisville Depression Center
Computer-assisted Psychotherapy for Depression: Ready for the Mainstream?

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Disclosures
Jesse Wright

- Software for computer-assisted CBT: Mindstreet, Empower Interactive
- Grant support:
  - R01MH082762 (NIMH)
  - R21MH102646 (NIMH)
  - R18HS024047 (AHRQ)
What is Computer-assisted Cognitive-behavior Therapy (CCBT)?

- A fully developed program that engages patients in the core cognitive and behavioral methods of CBT.
- Typically includes a series of lessons or sessions that are done over a 4-16 week period.
- May be delivered on desktops, laptops, pads, and/or smartphones.
- May be guided (clinician supported) or unguided.
- Should be safe and secure (HIPAA compliant).
- May include clinician interface.
Advantages of Computer-assisted CBT (CCBT)

- Access/convenience
- Efficiency - treat more patients with available time
- Cost
- Delivery of evidence-based therapy
- Can provide learning/immersion experiences, skill building, interactive exercises, feedback, self-monitoring, homework enhancement, etc.
- Data collection and management
Disadvantages of CCBT

▪ No programs have been developed that have the empathy, wisdom, and flexibility of clinicians.
▪ Improvements are needed in personalization and customization.
▪ Completion rates have been low in some studies.
▪ AI is just starting to be employed.
▪ Moving from research based prototypes to wide-spread dissemination.
Lesson 1: Basic Principles

Practice the skills from Lesson 1

Basic Principles

Review

Lesson 1 Overview

Progress

You're making good progress. Keep up the good work!

Takeaways

- Cognitions are the thoughts or ideas that run through our minds
- Our cognitions (thoughts) have a major effect on how we feel (emotions) and how we act (behavior)
- Events stimulate cognitions which lead to emotions which are followed by actions
- Cognitive therapy self-help methods teach you how to recognize and change distorted thinking
Clinician: User Progress & Personal Data View

Progress Summary

Current Lesson: Identify Thoughts
Lesson 2: Identify Thoughts

Progress: 100% complete

Learning Comprehension: 40% correct

Homework:
- Record Positive Thoughts
  - Completed on 02/21/2011 12:34 EST
  - View all
- Record Negative Thoughts
  - Completed on 02/21/2011 12:34 EST
  - View all
- Positive Changes in My Thinking
  - Completed on 02/21/2011 12:34 EST
  - View all

Recent Activity

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<th>Activity</th>
<th>Date</th>
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<td>Logged out</td>
<td>April 07, 2012 06:05</td>
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<td>Logged in</td>
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<td>Logged out</td>
<td>April 07, 2012 02:19</td>
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<td>Finished Record Negative Thoughts 554</td>
<td>April 07, 2012 02:17</td>
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</table>
Computer-assisted CBT: Research Team

- Michael Thase. M.D., Greg Brown, Ph.D., Marna Barrett, Ph.D., U of Pennsylvania
- Tracy Eells, Ph.D., Becky Antle, Ph.D., Rangaraj Gopalraj, M.D., U Of Louisville
- Paul McCrone, Ph.D., U of London
- Steve Wisnieski, Ph.D., U of Pittsburgh
- Jesse Owen, Ph.D., U of Denver
- Andrew Wright, M.D., U of Washington
- Anne Marie Albano, Ph.D., NYU
- Michael Otto, Ph.D., Boston U
Effect Sizes at End of Active Treatment

HRSD-17: Intent to Treat Analysis

- For CCT: $d = 1.14$
- For CT: $d = 1.04$
- No significant differences between treatments
- Drop out rate same in CCBT and CBT (15%)
CCBT for Depression: Replication and Extension

- Supported by NIMH R01MH082762
- 154 subjects
- Sites: U of Louisville, U Pennsylvania, U Pittsburgh, U London
- Random assignment of drug-free subjects to standard CBT (20 sessions) or CCBT (12 sessions)
- Clinician contact time in CCBT reduced by 2/3
CCBT vs CBT in 154 Drug-free Patients with Major Depression

Mean Hamilton Rating Scale Scores

Thase et al., American J Psych. 2017.17010089
CCBT for Depression in Primary Care

- Supported by R18HS024047 (AHRQ)
- 175 primary care patients with depression
- Treatment as usual (TAU) versus TAU + CCBT with Good Days Ahead over 12 weeks
- Clinician support via telephone with maximum of 20 minutes per week
### CCBT vs TAU for Depression in Primary Care: Effect Sizes ITT Analysis

<table>
<thead>
<tr>
<th>Time</th>
<th>PHQ-9</th>
<th>GAD-7</th>
<th>SWLS</th>
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<tbody>
<tr>
<td>Post-treatment</td>
<td>0.37**</td>
<td>0.33**</td>
<td>0.39**</td>
</tr>
<tr>
<td>3-month FU</td>
<td>0.53**</td>
<td>0.46**</td>
<td>0.50**</td>
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<tr>
<td>6-month FU</td>
<td>0.52**</td>
<td>0.25</td>
<td>0.49**</td>
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</tbody>
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Wright et al., 2020; **p = < .01; PHQ-9 = Patient Health Questionnaire-9; GAD-7 = Generalized Anxiety Disorder-7; SWLS = Satisfaction with Life Scale
Beating the Blues

Computer-therapy program for anxiety and/or depression

Developed by Judy Proudfoot (Institute of Psychiatry) in conjunction with Ultrasis plc

Collaborators: Jeffrey Gray, David Goldberg, Anthony Mann, Isaac Marks
Beating the Blues (US) with Clinician Support

Mean PHQ-9 Scores

\[ g = 1.45; \text{Forand et al. Behavior Therapy 48:295-307, 2018} \]
“Sadness Program” with Technician and Clinician Support

Mean HRSD Scores

- CCBT
- Attn. Control

Pre-treatment
Post-treatment

$d = .80$; Rosso et al. Depress Anx 34:236-245, 2017
Deprexis with Technician Support

Mean HRSD Scores

Large-scale Study of Unsupported CCBT

- 691 patients from 100 GP sites in UK
- Beating the Blues vs. TAU
- Mood Gym vs. TAU

Unsupported CCBT in Primary Care

Mean PHQ-9 Scores

Pre-treatment  4 months  12 months  24 months

Beating the Blues  TAU

CCBT for Depression: Meta-analysis

Mean Effect Size

Wright et al. J Clin Psych 80(2):18r12188, 2019; 40 studies
CCBT for Depression: Meta-analysis

- Type of support influences effect:
  - email $g = .56$; telephone $g = .78$
  - face-to-face $g = .83$

- Completion rate influences effect:
  - rate not reported $g = .29$; $\leq 25\%$ $g = .41$
  - $\geq 75\%$ $g = .82$

- Setting influences effect:
  - primary care $g = .24$
  - non-primary care $g = .57$

Wright et al. J Clin Psych 80(2):18r12188, 2019
Clinical Implementation of CCBT

- Try the program yourself.
- Choose programs with demonstrated effectiveness and safety.
- Orient patients to key features of program.
- Provide support (in office, telemedicine, email)
- Use clinician interface, if available, to monitor progress and guide treatment.
- Integrate CCBT into comprehensive treatment plan.
- Identify barriers to use of CCBT and try to find solutions.
# CCBT Programs with Multiple Randomized Controlled Trials

<table>
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<tr>
<th>CCBT Program</th>
<th>Link</th>
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<tr>
<td>Beating the Blues US</td>
<td><a href="https://www.beatingthebluesus.com/">https://www.beatingthebluesus.com/</a></td>
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<td>Deprexis US</td>
<td><a href="https://us.deprexis.com/">https://us.deprexis.com/</a></td>
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<td>Good Days Ahead</td>
<td><a href="http://www.empower-interactive.com/solutions/good-days-ahead/">http://www.empower-interactive.com/solutions/good-days-ahead/</a></td>
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<td>Sadness Program</td>
<td><a href="https://www.c4tbh.org/program-review/the-sadness-program/">https://www.c4tbh.org/program-review/the-sadness-program/</a></td>
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