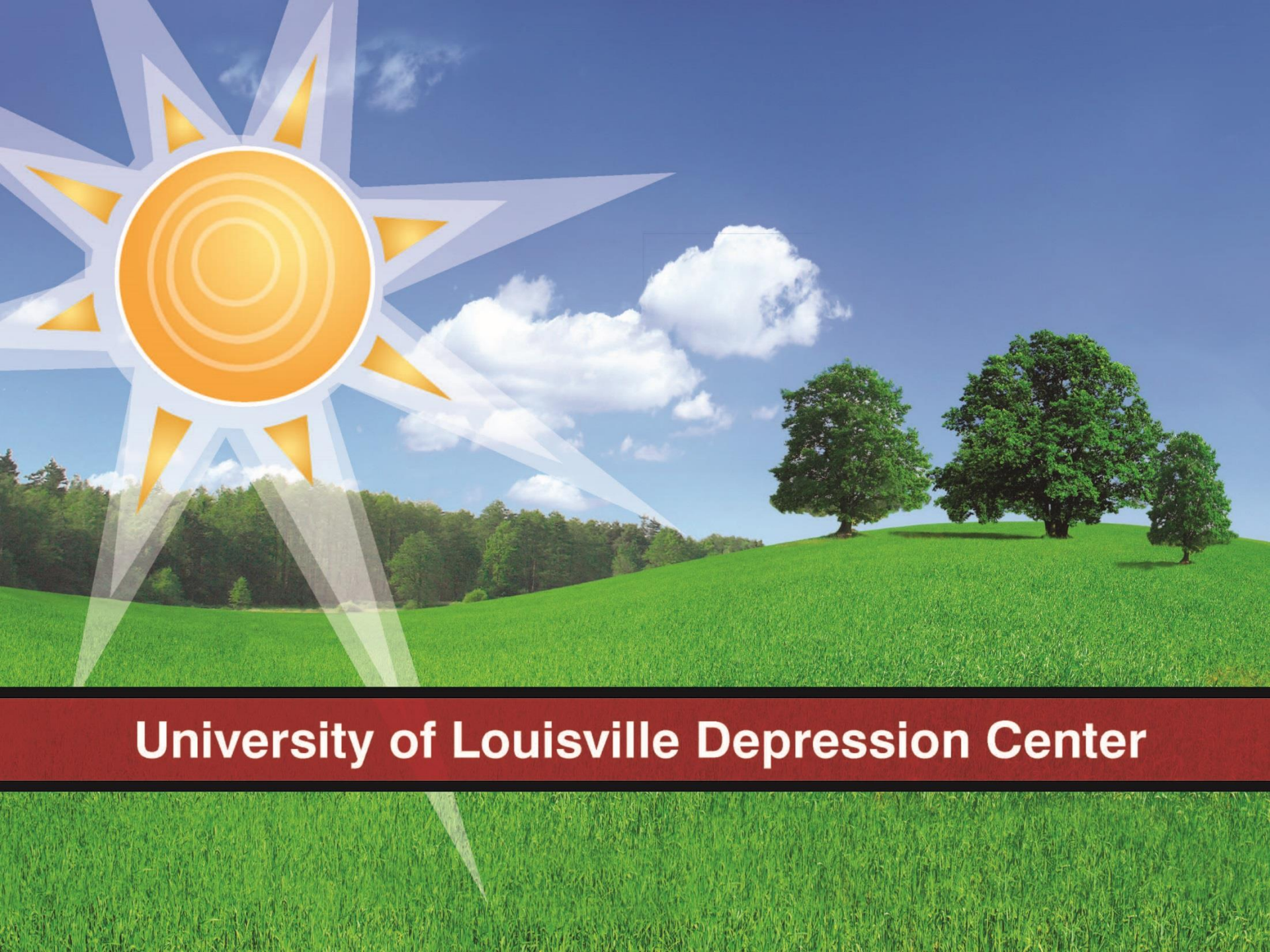

University of Louisville Depression Center

Computer-assisted Psychotherapy for Depression: Can Technology Enhance Treatment Delivery?

Tracy D. Eells, Ph.D.
Jesse H. Wright, M.D., Ph.D.
University of Louisville

Disclosures
Tracy Eells

- Book Royalties: APA Books; Guilford Press
- Grant support:

  R01MH082762 (NIMH)

  R18HS024047 (AHRQ)

Disclosures
Jesse Wright

- Software for computer-assisted CBT:

  Mindstreet, Empower Interactive
- Book Royalties: American Psychiatric Press Inc., Simon and Schuster, Guilford Press
- Grant support:

  R01MH082762 (NIMH)

  R21MH102646 (NIMH)

  R18HS024047 (AHRQ)

Presentation Outline

- Advantages and disadvantages of computer-assisted cognitive-behavior therapy (CCBT)
- CCBT research
- CCBT illustrations
- CBT apps
- Future directions

Why Use Computer Technology in Psychotherapy?

- Cost
- Access/convenience
- Efficiency
- Delivery of evidence-based therapy
- Learning/immersion experiences not possible in standard therapy
- Can provide education, skill building, engaging interactive exercises, feedback, self-monitoring, homework enhancement,etc.
- Data collection and management

Problems/Barriers in Computer-assisted Psychotherapy

- Challenges in developing effective software
- Adoption by clinicians
- Insurance coverage
- Need for more research
- Moving from research based prototypes to wide-spread dissemination

Methods for Computer-assisted Psychotherapy

- Vast majority of programs are based on CBT
- Virtual reality exposure therapy
- Text-based computer programs
- Multimedia computer programs
- Mobile applications (not full CCBT)

Computer-assisted CBT for Depression

Learn

Current Lesson

All Lessons

Lesson 1: Basic Principles

Overview | Content | Homework

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

Learn

2 Practice the skills from Lesson 2
Identifying Thoughts
Review

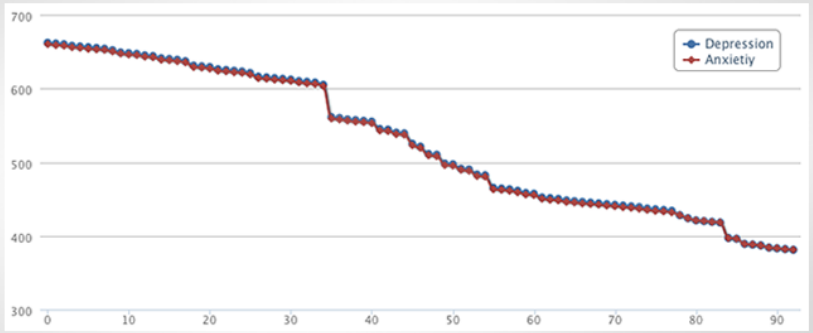
3 Practice the skills from Lesson 3
Labeling Thoughts
Review

4 Practice the skills from Lesson 4
Modifying Thoughts
Review

Kara User

- Progress
- Activity
- Profile
- Clinicians

Progress Summary



2 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
- Completed on 02/21/2011 12:34 EST
- View all

Record Negative Thoughts
- Completed on 02/21/2011 12:34 EST

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

Recent Activity

View All

Activity	Date
Logged out	April 07, 2012 06:05
Logged in	April 07, 2012 05:51
Logged out	April 07, 2012 02:19
Finished Record Negative Thoughts 554	April 07, 2012 02:17

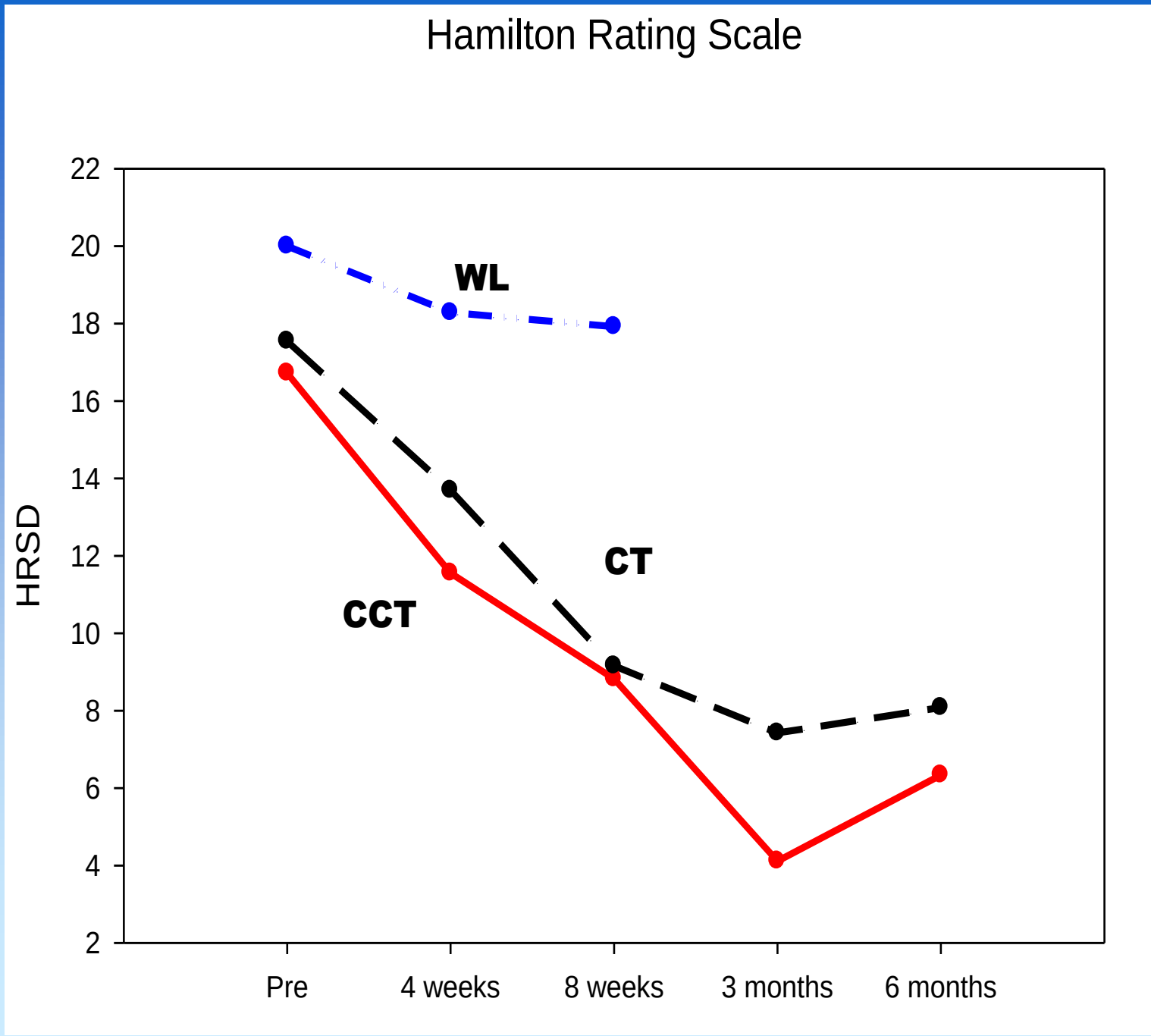
Computer-assisted CBT: Research Team

- Michael Thase. M.D., Greg Brown, Ph.D., Marna Barrett, Ph.D., U of Pennsylvania
- Jesse Wright, M.D., Tracy Eells, Ph.D., Becky Antle, Ph.D., Paul Salmon, Ph.D., Renee Girdler, 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
- Monica Basco, Ph.D. U of Texas, Arlington
- Michael Otto, Ph.D., Harvard U

Computer-assisted CBT for Depression

Study Design

- Subjects: 45 outpatients with DSM-IV diagnosis of major depression
- Diagnosis on SCID
- Subjects drug-free
- Randomly assigned to cognitive therapy (CT), computer-assisted cognitive therapy (CCT), or waiting list (WL)
- 9 sessions in 8 weeks, 25-minute sessions for CCT


Hamilton Rating Scale
HRSD
22
20
18
16
14
12
10
8
6
4
2
WL
CT
CCT
Pre
4 weeks
8 weeks
3 months
6 months

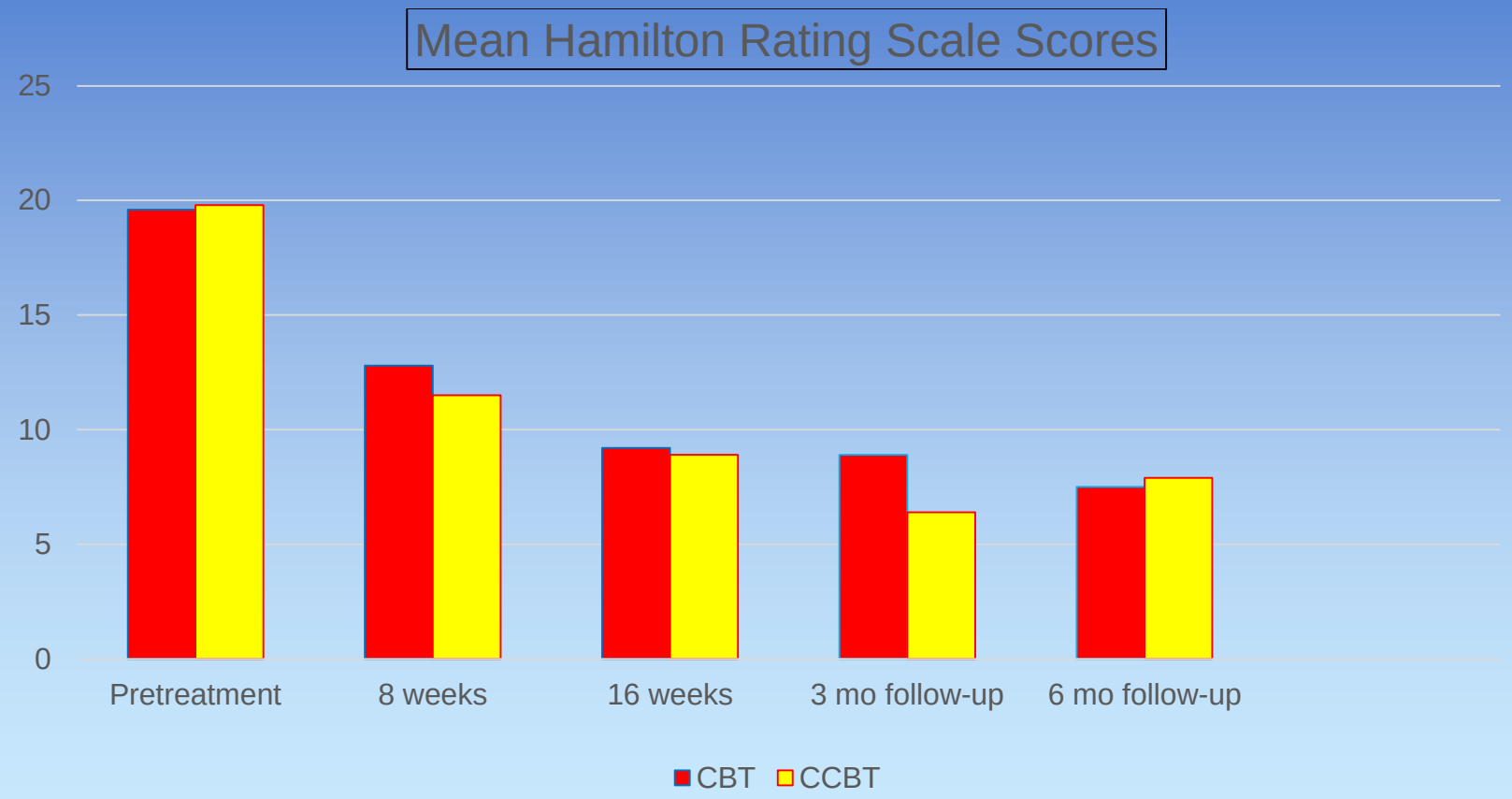
Effect Sizes at End of Active Treatment
HRSD-17: Intent to Treat Analysis

- 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

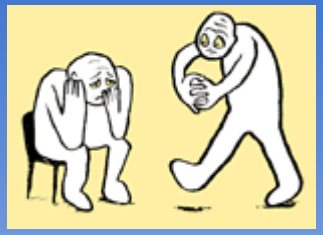


Thase et al., American J Psych. 2017.17010089

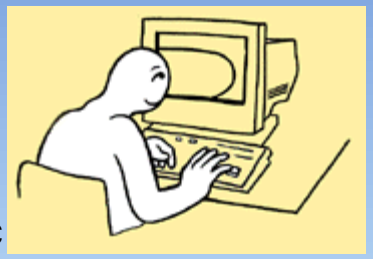
Current Study: CCBT for Depression in Primary Care

- Supported by R18HS024047 (AHRQ)
- 176 primary care patients with depression
- Treatment as usual (TAU) versus TAU + CCBT
- Assesses treatment outcome (PHQ-9 and GAD-7) plus quality of life, and cost-benefits (including medical care costs)

Beating the Blues

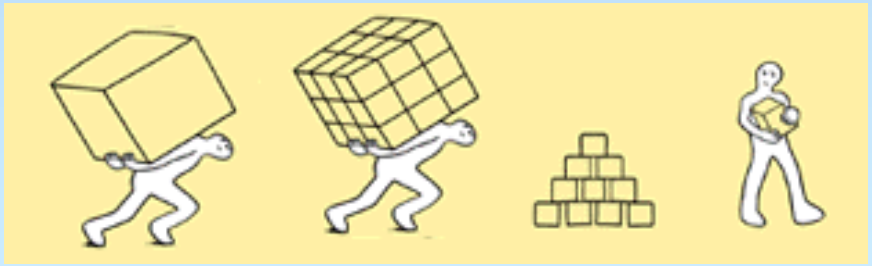


Computer-therapy program for anxiety and/or depression



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

Collaborators: Jeffrey Gray, David Goldberg, Anthony Mann, Isaac Marks



Pleasurable activity

beating the blues
cognitive behavioural therapy

session 1

How many pleasurable things did you do last week?

1.090.007

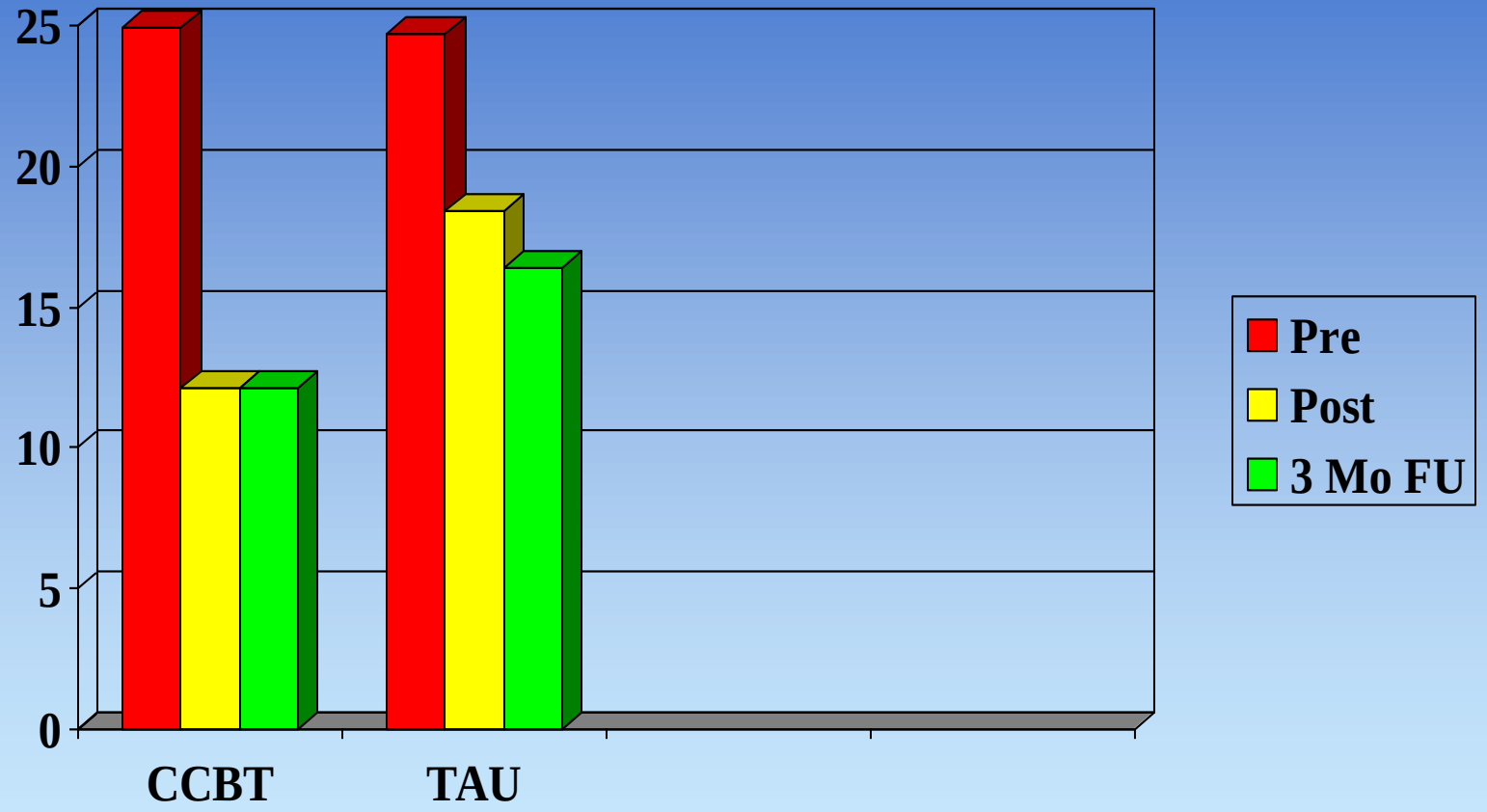
- None
- 1
- 2 to 4
- More than 4

Back

62 %

How many pleasurable things did you do last week?

“Beating the Blues” CCBT in Primary Care



BDI scores; p= <.001; Between groups effect size = 0.63
Proudfoot et al. Brit J Psychiatry 185:46-54, 2004; support not specified.

Meet the characters

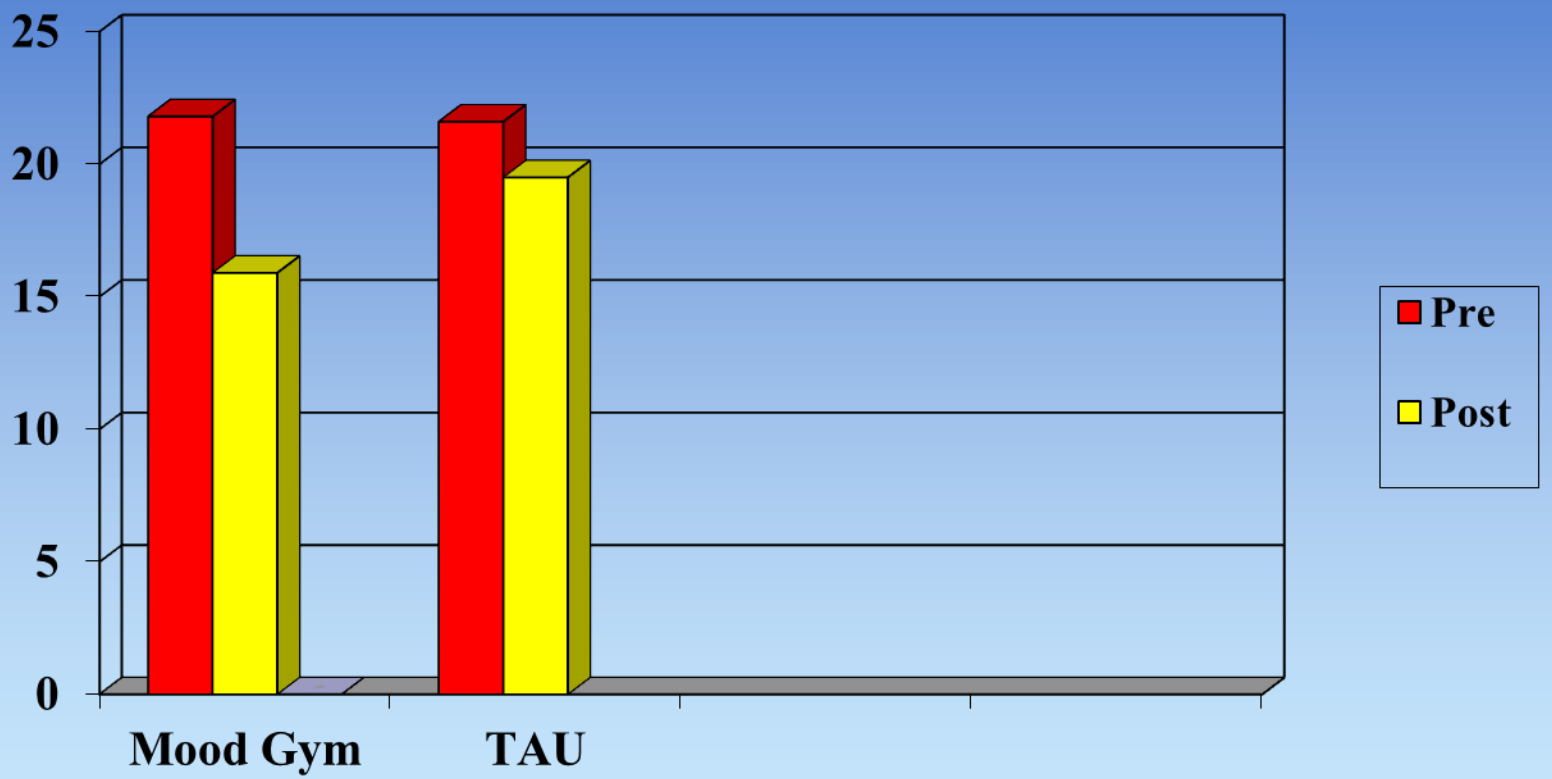
Time to get started. Now that you know what to expect from MoodGYM, let's meet some of the characters who are at MoodGYM who are also experimenting with changing their mood.

Click on the thumbnails below to learn about the characters in MoodGYM.

Meet MOODY. He had a hard time at school because he felt shy (had bad acne for a start), has trouble approaching girls he likes, gets grumpy and angry with his friends.

He has disagreements over nothing, and sulks, flies off the handle occasionally with his parents, but basically is a nice guy. Works hard, is conscientious, is currently at Uni, studying Science (failed to get into Dentistry). Often feels

“Mood Gym” with Telephone Support for Depression in Primary Care

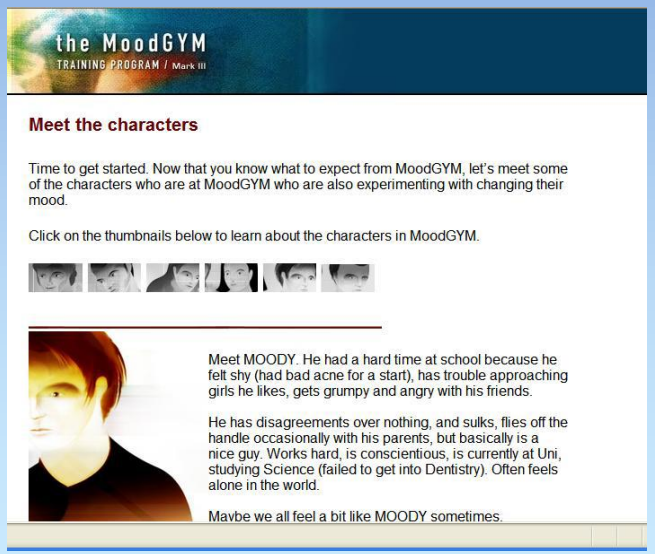


Mean CES-D scores; p = < .001; Between groups effect size = 0.38

McKinnon et al., British J Psych. 192:130-134, 2008; telephone support

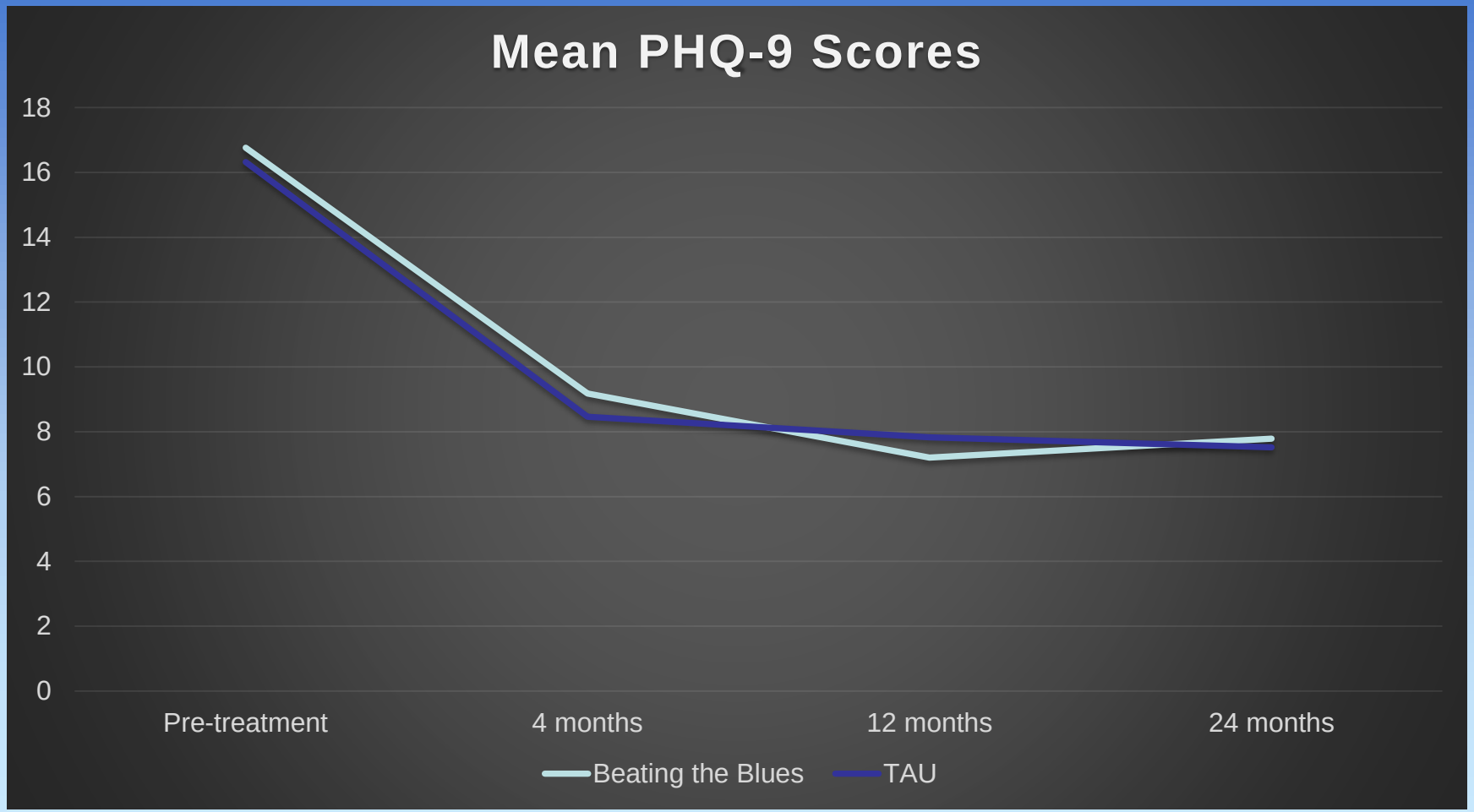
Large-scale Study of Unsupported CCBT

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



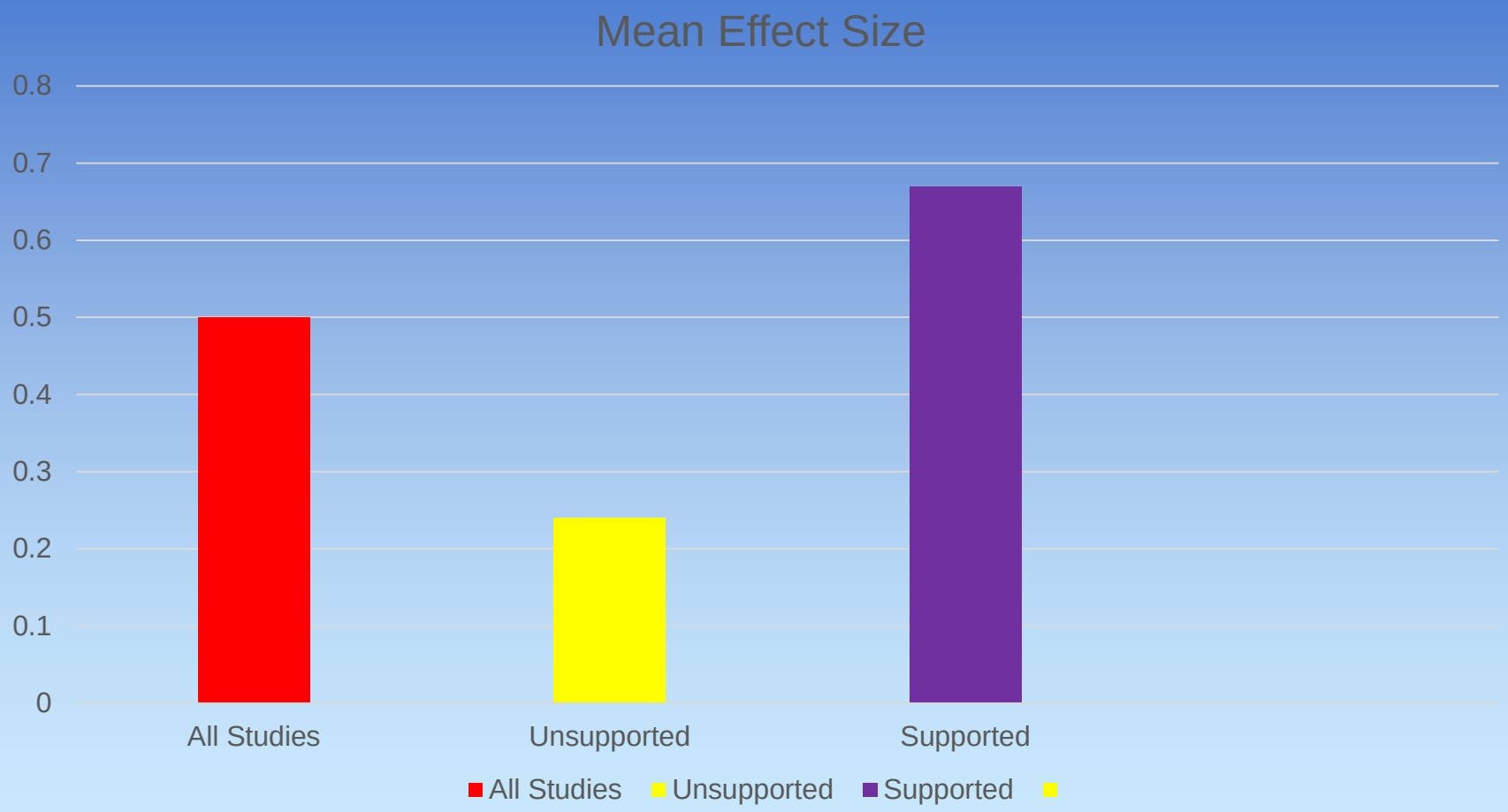
Glibody et al. BMJ 2015: 351:H5627 doi:10.1136/bmj.h5627

Unsupported CCBT in Primary Care



Gilbody et al. BMJ 2015: 351:H5627 doi:10.1136/bmj.h5627

CCBT for Depression: Meta-analysis



Wright et al. (2019), J. Clin. Psychiatry; 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; ≤ 25% *g* = .41
  - ≥ 75% *g* = .82
- Setting influences effect:
  - primary care *g* = .24
  - non-primary care *g* = .57

Wright et al. (2019) J. Clin. Psychiatry. Accepted for Publication

Issues with CCBT Research

- Recruitment methods
  - Internet vs. clinical populations
- Disadvantaged populations understudied
- Completion rate
- Lack of precision in reporting support methods and time, other variables
- Primary care understudied
- Unclear what level or type of support is most effective
- Moving from research settings to dissemination of CCBT

CCBT for Anxiety Disorders

Video Demonstration

- “iCT for Social Anxiety Disorder”
- Oxford University, United Kingdom
- Principal Investigators David M. Clark and Anke Ehlers – video compliments of Dr. Clark
- Recent unpublished trial found iCT as effective as standard face-to-face cognitive therapy
- Reduction of therapist time by 80%
- Will soon be disseminated widely in UK through Improving Access to Psychotherapies (IAPT) program

CCBT for Anxiety Disorders: Meta-analysis

- 40 studies, non-OCD or PTSD
- ITT and completer analyses
- In 31 trials of CCBT vs WL, effect size = .92, p = <.001
- Effect size greater in CCBT for specific disorders (e.g., panic disorder ES = 1.15 vs mixed anxiety ES = 0.69, p = <.001)
- In 15 trials of CCBT vs CBT (face-to-face), no differences found (ES = 0.05)

Adelman et al. J Clin Psychiatry 75(7):695-704, 2014

CCBT for Anxiety Disorders: Impact of Clinician Support

Clinician Support	Effect Size
None	0.66
E-mail	0.89
Telephone/face-to-face	1.03

Drop out rate higher with no clinician support

Adelman et al. J Clin Psychiatry 75(7):695-704, 2014

Mobile Apps for Depression, Anxiety, and Stress Management

Thanks to:

- Steven Chan, M.D., MBA – U. California, San Francisco
- Robert Caudill, M.D. and Laura Bishop, M.D. – U. Louisville
- Willem Kuyken, Ph.D. – Oxford U.
- Matthew Mishkin, M.D. – U. Colorado
- Laura McCray, M.D. – U. Vermont
- Ryan Wetzler, Psy.D. – Sleep Health Center, Louisville

App Count:
App Annie 11/28/2018

Category	IOS	Google Play
Depression	94	255
Anxiety	174	212
Stress	507	598
Bipolar Disorder	15	30
Insomnia	61	98

Potential Yet Caution

Systematic Reviews of Mobile Apps for Anxiety and Mood Disorders

- Van Ameringen et al. 2017

"The app marketplace is littered with apps claiming to treat symptoms" – "Overall, treatment effects of apps are much smaller than other evidence-based treatments."

- Sucala et al. 2017

Of 52 anxiety apps, 67.3% had no involvement of health care professionals.

Only 3.8% were rigorously tested.

Van Ameringen M et al. Depress Anxiety 34:526-539, 2017
Sucala M et al. Depress Anxiety 34:518-525, 2017

Systematic Review of Mobile Apps for Depression - 2018

- 17 randomized, controlled trials out of estimated 4,000+ apps for mental health
- “Evidence base is scarce.”
- Apps for depression:

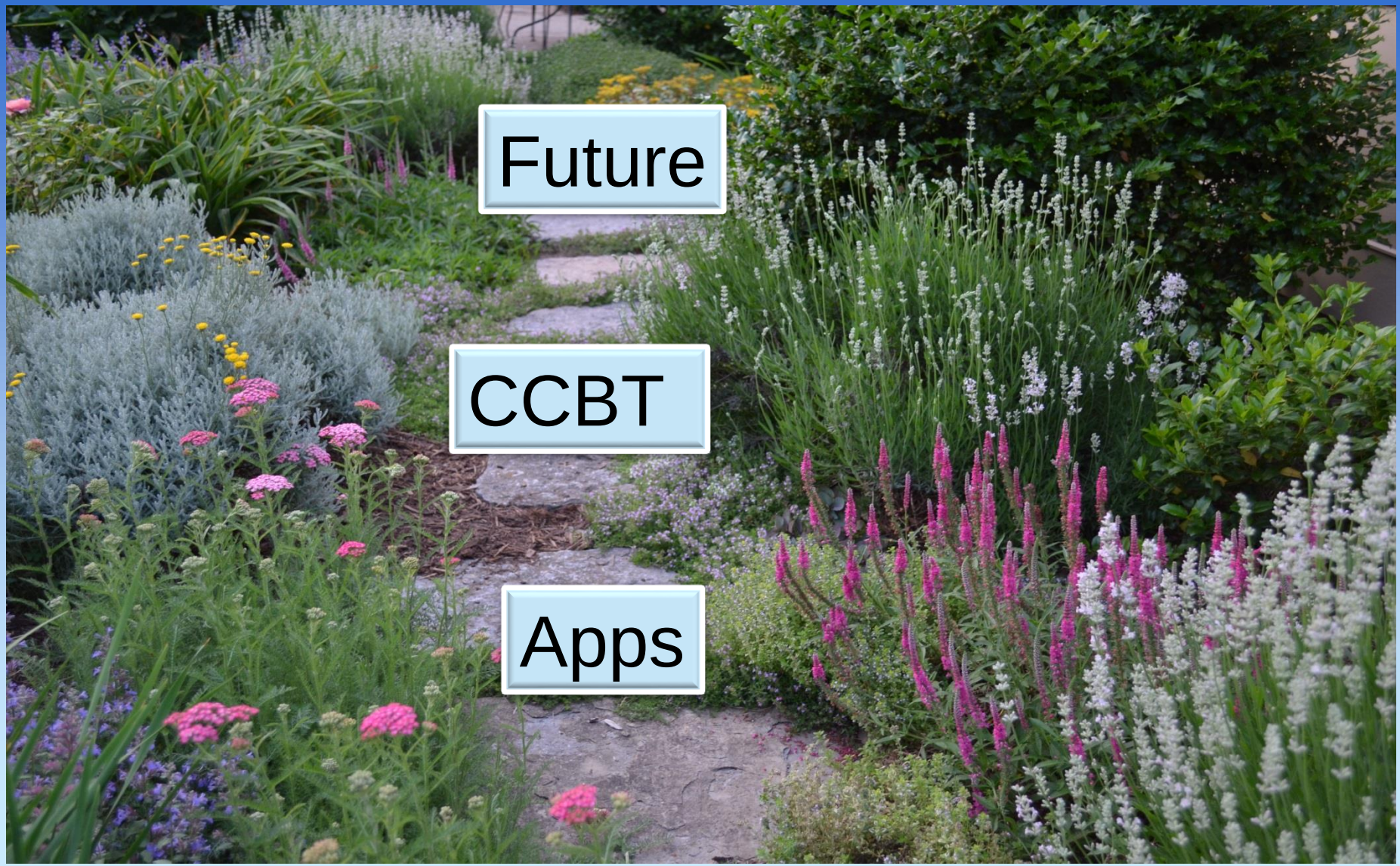
  - may not reflect evidence-based treatment guidelines

  - rarely cite source information

  - often lack mention of any privacy policies

Wang K et al. J. Psychiatric Research 107:73-78, 2018

The Garden of Possibilities



Future Directions

- Development of wide range of programs
- Use of new devices/technology for delivery
- Increased interactivity and sophistication of programs
- Increased appeal and “stickiness” of programs
- Social networking?
- Broader dissemination?


ASE 10/15
PCSA 9/10
SAGES 9/28

Discussion