

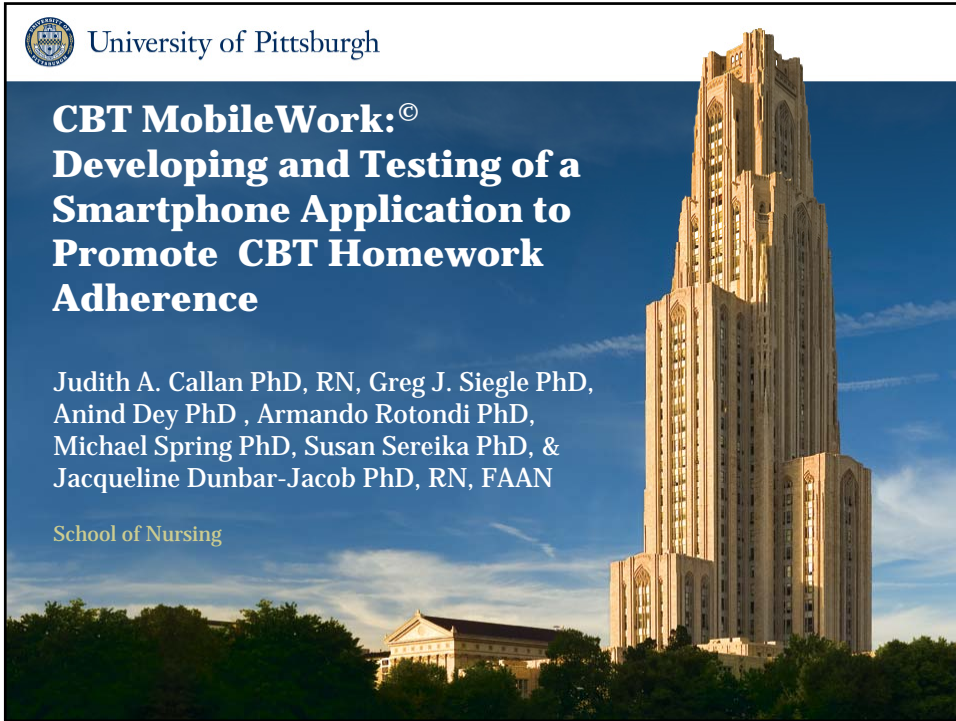


University of Pittsburgh

## **CBT MobileWork:® Developing and Testing of a Smartphone Application to Promote CBT Homework Adherence**

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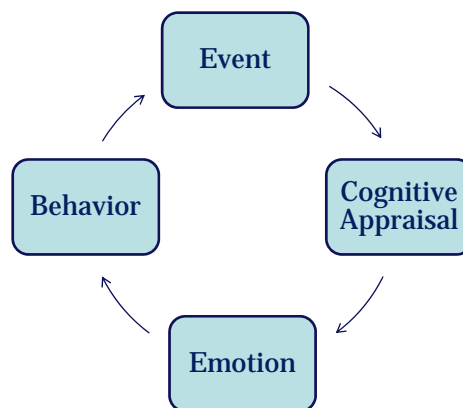
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## **Cognitive Behavioral Therapy (CBT)**



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## CBT Homework

- **assignments that patients are expected to complete outside of their therapy session**
- **integral component of CBT yet adherence is a common problem-patients report many barriers (pragmatic issues such as available time, chaotic lifestyle, too tired, time management, difficult assignments)**
- **adherence associated with enhanced and earlier clinical recovery**

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## Development Phase

- **review of CBT Literature to extract and organize homework exercises**
- **work with programming team to simplify and identify appropriate functionalities**
- **collapse exercises to manageable and related content areas**

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## **Development of Content and Features- Considerations**

- **clinically appropriate-addresses a real need, not just for the sake of technology**
- **addresses theory and knowledge of clinical area**
- **any issues unique to the population, i.e. cognitive deficits, lack of knowledge**

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## **Research Findings : Development**

- **7 categories of homework : monitoring, thinking, behavioral, problem solving, list-making, scheduling, and interpersonal**



## Research Findings : Development

- **7 additional features: CBT Skill Navigator, What is CBT?, E-mail my therapist, my CBT library, my CBT toolbox, check my mood (ecological momentary assessment of mood (3X/day) and take notes**

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## CBT MobileWork Main Icon



Main Icon



## Log In Page



## CBT MobileWork Main Menu

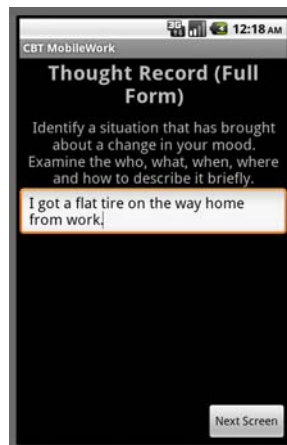




## Homework Menu



## Thought Record-Description of Situation





## Identify Feelings

The screenshot shows the 'Thought Record (Full Form)' interface. At the top, it says 'CBT MobileWork' and '12:19 AM'. Below that, the title 'Thought Record (Full Form)' is centered. The interface is divided into four columns: 'Initial Feelings', 'Automatic Thoughts', 'Alternative Thoughts', and 'Feelings Now'. Under 'Initial Feelings', the word 'anger' is entered in a text box. To the right of this text box are three 'Rate' buttons: 'Rate Feeling', 'Rate Thought', and 'Rate Feeling'. A 'Next Screen' button is located at the bottom right of the form.



## Rate Strength of Feeling- slidebar

The screenshot shows the 'Thought Record (Full Form)' interface with a modal dialog box overlaid. The dialog box is titled '75%' and contains the text 'Rate the strength of this feeling from 0-100%'. Below the text is a horizontal slider bar with a yellow segment on the left and a grey segment on the right. A 'Done' button is centered below the slider. The background shows the 'Thought Record (Full Form)' interface with 'anger' entered in the 'Initial Feelings' field and a 'Next Screen' button at the bottom right.



## Usability Testing

- **recruit 8 depressed CBT patients to give feedback about screen images, organization, ease of use, and satisfaction**
- **recruit 5 CBT therapists to evaluate CBT homework content and usability**
- **three cycles of interview and testing (iterative process) then prototype revision**

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## Usability Study Findings : ASQ

Items	Session 1 (N=8)			Session 2 (N=7)		
	<i>Mean (SD)</i>	<i>Med</i>	<i>Mode</i>	<i>Mean (SD)</i>	<i>Med</i>	<i>Mode</i>
Ease of completing tasks in scenario	1.75 ± 1.04	1.5	1	1.71 ± 1.25	1	1
Time to complete tasks	1.63 ± .74	1.5	1	1.71 ± .95	1	1
Support when completing tasks	1.5 ± 1.22	1	1	1.86 ± 2.27	1	1
ASQ Overall	1.63 ± 1	1.33	1	1.76 ± 1.49	1	1

ASQ scores range from 1-7 (lower scores = higher satisfaction)





## PSUQ (final session)

- assess the interface, organization, helpfulness, ease of use, clarity, learnability, and overall satisfaction.
- potential scoring ranges from 17 to 119.
- The range for the individual PSUQ questions were 1.0 (0) to 1.8 (.836).
- **The mean total rating for the PSUQ was 22.8(5.40).**



## Clarity, Conciseness, Clinical Utility

- clarity ranged from 8 to 10 with a mean of 9.85(0.48).
- conciseness ranged from 7.5 to 10 with a mean rating of 9.60 (1.23).
- clinical utility ranged from 8 to 10 with a mean rating of 9.81 (0.6).

Scale of 1 to 10 (1 is worst rating; 10 is best rating)



## Pilot Study

- Recruit 14 depressed patients in CBT (16 to 20 sessions)
- Patients use CBT MobileWork as their primary method to perform CBT Homework activities

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## Pilot Study (N=14) CSUQ

- The possible range of scores was 19 to 133, with *lower* scores indicating *more favorable* ratings.
- The average score for individual items within the CSUQ (rated on a scale of 1 to 7) was 3.46 (1.64). The average overall score was 64.5 (20.06).

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## Mood Change

- Reduction in Mood ranged from 15.56 % to 96.15% (IDS-SR)
- Mean reduction of mood of 18.36 (3.38) and a 55.59 (8.67) mean % change in mood measured by the IDS-SR
  - IDS-SR is a 29-itemscale ranging from 0 to 78

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## Relationship between “app” usage and mood change

- Pearson correlations of the association with the percent of skills practice actions with difference of IDS-SR from baseline to final therapy session was -0.527 (p= .078)
- the percent of change in the IDS-SR was -0.554 (p=.062).

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## CBT Homework Adherence

- Overall homework adherence ranged from 4(4.24) to 7.42(1.73) on an 8-point scale from 1 (did not attempt homework) to 8 (did more homework than was requested)
- Mean homework adherence was 5.92 (0.27)

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## Patient Ratings of “app” Features

- Patients were asked to rate the navigation, conciseness, and clinical utility, as well as their opinions (favorable or unfavorable) on each of the homework menus on a 10-point scale, with lower scores indicating *less favorable* ratings.
- The ratings ranged from 7.0 (2.65) to 9.21 (1.30).

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## Conclusions

- Preliminary data indicates a high degree of usability when lab and field-tested.
- Performing CBT homework with the app was feasible
- All patients in the pilot showed improvement in mood and high level of homework adherence

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**Thank You!!**

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