



NATIONAL CENTER FOR TELEHEALTH & TECHNOLOGY

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Development and Evaluation of a Virtual Hope Box for Reducing Suicidal Ideation

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Background

- Since 2001, >1.5 million US military service members deployed in support of Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF).
- Traumatic Brain Injury
- Mental/Behavioral Health Problems
 - PTSD
 - Depression
 - Anxiety
 - Stress
 - Family/Social Dysfunction
 - **Suicide**
- 2010 DoD Suicide Event Report
 - 281 suicide completions confirmed
 - 863 attempts by 837 individuals



Suicide Prevention



Cognitive Therapy (CT) & Dialectical Behavior Therapy (DBT):

- Suicidal patients are able to cite reasons for wanting to die, but they often find it challenging to think of and believe in reasons for living
- CT/DBT teaches patients to identify desired outcomes and modify thoughts and behaviors to increase the likelihood of such outcomes
- Aimed at redirecting the distressed individual's attention towards reasons for living
- Combined with stress-reduction techniques - relaxation and distraction
- CT/DBT effective in managing suicidal patients

Hope Box or Hope Kit

- Common component of CT and DBT
- Physical representation of the patient's reasons for living that the patient creates and customizes
- Stores items that a patient can refer to during feelings of hopelessness
 - E.g. favorite CD, family photographs, reminders of accomplishments and future aspirations, supportive messages from loved ones.

Personal Smartphone Revolution

CDS's Behavioral Risk Factor Surveillance System (BRFSS) 2009: Personal Cell Phone Use

- 74% non military
- 83% active duty service members
- 77% recent veterans

T2's PTEC 2010: Personal Cell Phone Use

- 85% to 93% active duty service members
- 60% had downloaded free “apps”

Smartphone Apps 2012

- >300,000
- 8,000 health-related

Smartphone Apps for Psychological Health

- Approx 5,000 – 10,000
- Anxiety, depression, smoking, alcohol use, psychosis, diet, exercise, weight loss, nutrition, parenting, cognitive performance, relationships, relaxation, sleep, spirituality, and general wellbeing.

Army exploring plans to equip all service members with smartphones



DCoE's National Center for Telehealth & Technology (T2)

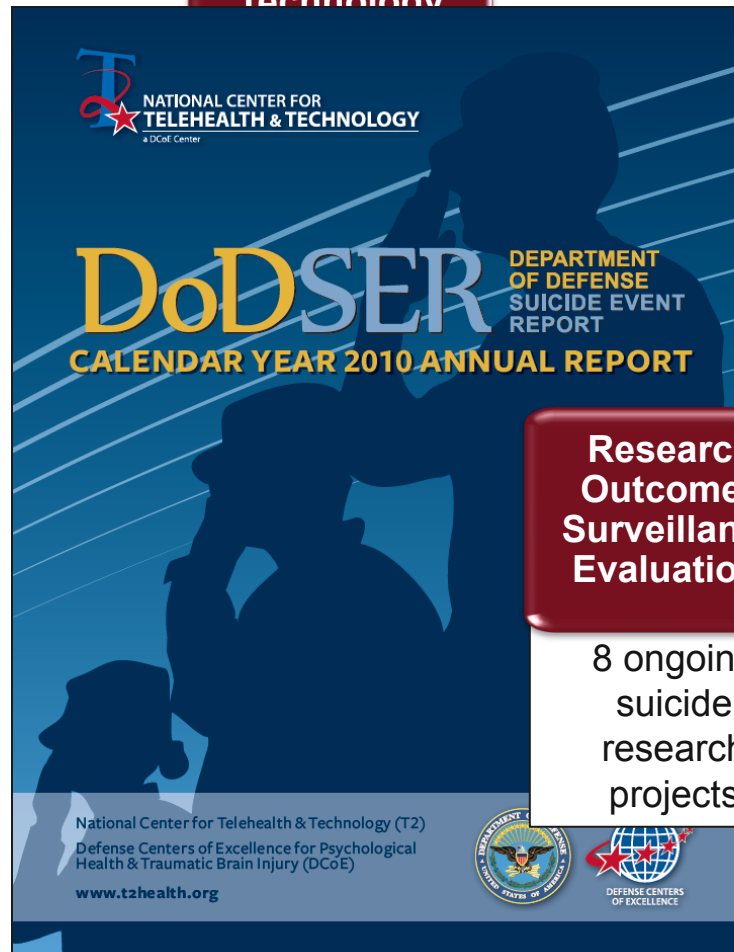
Technology for Military Psychological Health & TBI

Population and Prevention Programs

Website development, surveillance tools, mobile applications



Innovative Technology



Clinical Telehealth

Technologies for remote clinical care. Addresses health care access barriers (geography, mobility, and stigma).

Research, Outcomes, Surveillance, Evaluations

8 ongoing suicide research projects



National Center for Telehealth & Technology (DCoE)

Smartphone Apps

At least 27 military psychological health and TBI apps planned, in development, or already publicly available

- **T2MoodTracker** - Enables users to create a personal graphical record of their post-deployment mood changes.
- **Breathe 2 Relax** - Demonstrates and guides deep breathing techniques to reduce stress.
- **Tactical Breathing Trainer** - used to gain control over physiological and psychological responses to stress.
- **Mobile PE** - Allows PTSD patients undergoing prolonged exposure therapy to track the progress of daily homework exercises.

- **PTSD Coach** - an app to provide self-assessment, education, symptom management, and support resources.

- **T2 Mobile** - measuring

- **Provider** - compassi

Virtual Hope Box: Create a smartphone app containing essential elements of a hope box and associated components of CT/DBT for military service members and veterans in distress



Virtual Hope Box (VHB) App for Smartphones: Rationale

1. Severe psychological problems leading to hopelessness and even suicide are impacting recently deployed service members and their families
2. CT & DBT have shown promise in treating suicidality
3. Therapeutic coping strategies often include use of hope box
4. Hope box is key therapeutic component but physically unwieldy and inconvenient- often not available when patient needs it most during crises
5. Rates of personal cellphone use among active and recently retired military personnel are extremely high- ubiquitous
6. Because mobile devices such as smartphones are carried all the time, they can expand the reach of traditional therapeutic interventions
7. A “Virtual Hope Box” (VHB) takes the common hope box practice and uses smartphone vehicle and features to enhance the access and experience.
8. Rich multimedia options on smartphone allow more varied options. Furthermore, smartphones are already common repository for user-generated and user-preferred media.
9. Service members are highly mobile. Suicidal crises most likely to emerge in absence of healthcare providers.
10. Smartphone-based app allows for easily personalized VHB that is highly portable and always available to a user in distress wherever they are.



VHB Study

Objective: To conduct a proof of concept development and evaluation of a virtual hope-box (VHB) smartphone app to supplement in-person clinical therapy for service members with suicide ideation or behavior.

We will develop and test the VHB app in two phases:

1. Phase 1: an initial prototype development followed by usability testing of the prototype to inform refinement of the app interface, functioning and content.
 - At T2/JBLM
2. Phase 2: a proof of concept pilot comparing acceptability and utility of the VHB with a conventional “physical” Hope Box (PHB) in clinical practice.
 - Dialectical Behavior Therapy (DBT) Program at the VAMC Portland Mental Health Clinic
 - High-risk-of-self-harm veterans entering DBT for Bipolar Disorder or PTSD
 - “Self-soothing box” currently used in distress tolerance module

VHB Proof of Concept Study

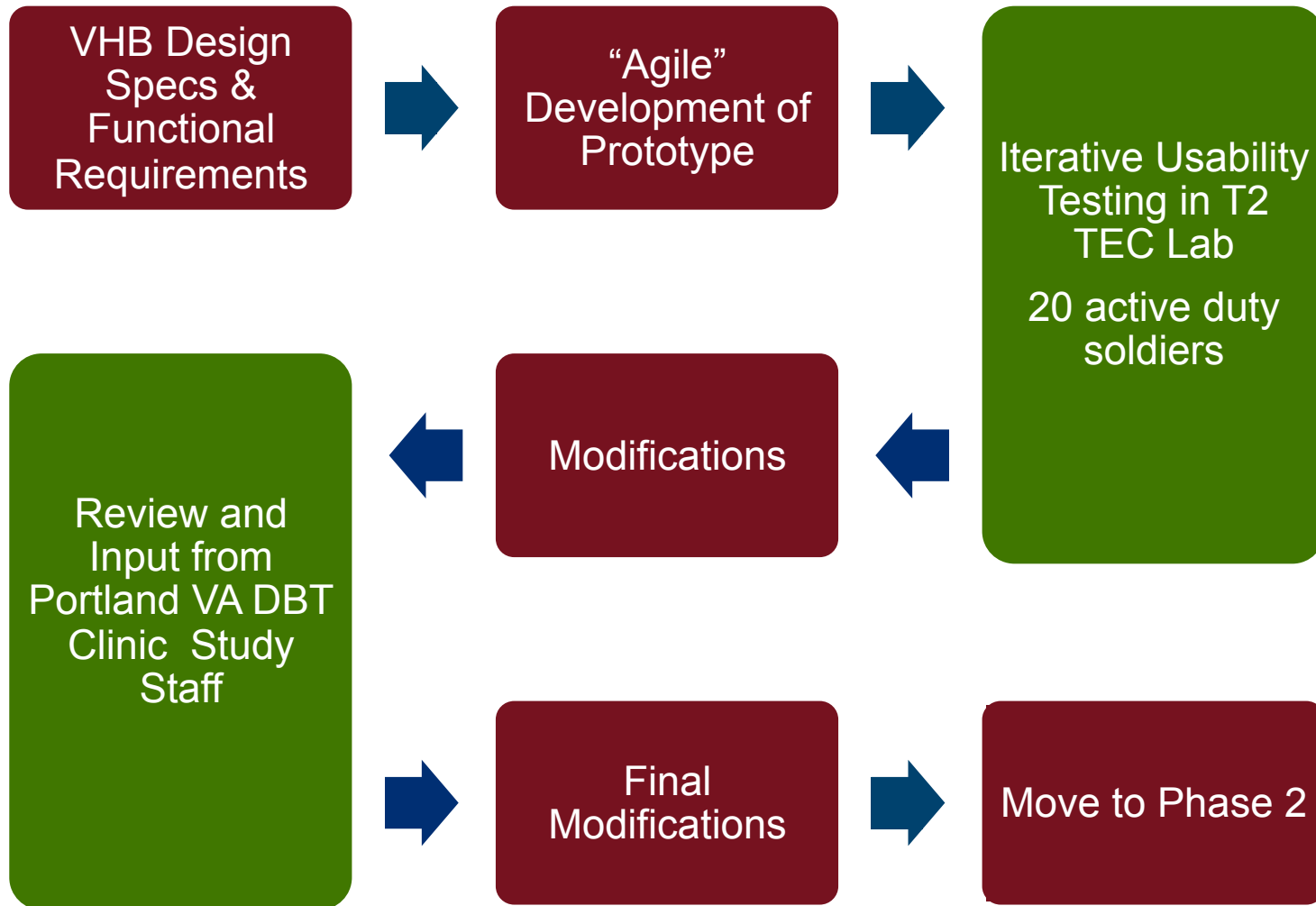
Research Questions:

1. Can a smartphone app be developed that contains the essential elements of a hope box and associated components of CT/DBT in a package acceptable to and usable by military service members and veterans?
2. Is the prototype VHB app as usable, acceptable, convenient, and ostensibly useful as a conventional hope box to a clinical sample of service veterans at high risk of self-harm and suicide, and their providers.

Hypotheses:

1. The VHB will demonstrate high usability (e.g., easy to learn, efficient and convenient to use) with clinical outpatients in treatment for suicidal ideation
2. Patients will use the VHB more than a traditional “physical” hope box (PHB)
3. The VHB will demonstrate high patient acceptability and satisfaction.
4. Patients and their providers will prefer the convenience, easy utility, content richness, and hip-pocket portability of the VHB to the more static and cumbersome PHB

VHB Study: Phase 1- T2

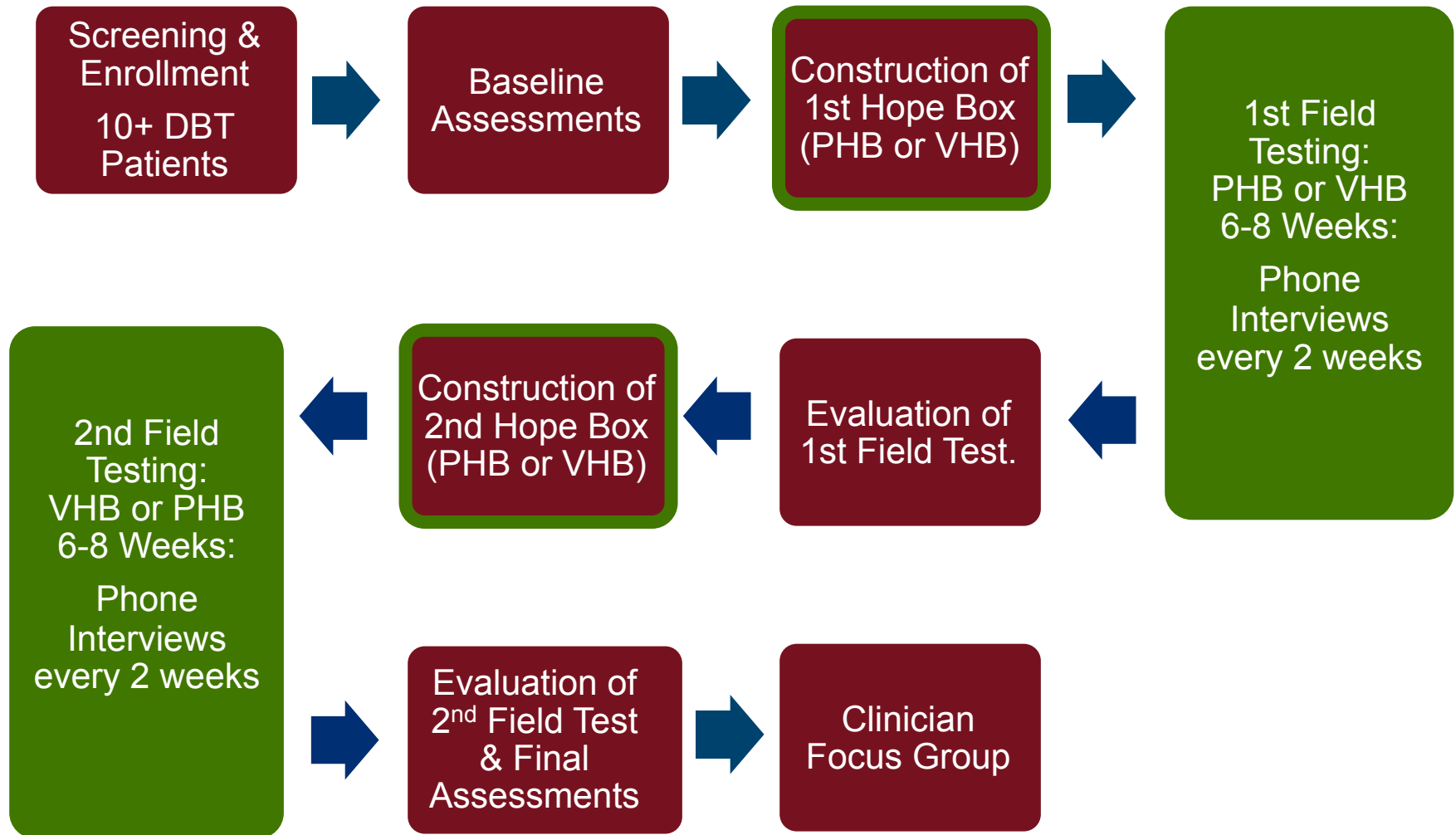


Developers and T2 Content Specialists



External Review

VHB Study: Phase 2- Portland VA DBT Clinic



 *In Clinic*

 *Away from Clinic*

VHB Study: Patient & Clinician Outcomes

Baseline:

Background Questionnaire: Standard demographical information + experience and proficiency with personal technology

Thoughts, Feelings & Behaviors Questionnaire (TFB):

- PHQ9
- Interpersonal Needs Questionnaire (INQ-12)
- Revised Suicide Ideation Scale (RSIS)

Common Data Elements (CDE). Compilation of selected items from well-established and standardized subclinical self-assessments questionnaires. The CDE will be used as a comparative baseline measure across a number and variety of future studies.

During Hope Box Use:

Usage Semi-structured interviews (every 2 weeks by phone). Frequency of PHB or VHB use, purpose of use, how it was actually used, whether goal was achieved.

Electronic usage logs. Encrypted and stored on phone to be downloaded.

Follow-Up:

Thoughts, Feelings & Behaviors Questionnaire (TFB)

PHB Usability questionnaire & VHB Usability

Questionnaire. a) frequency of use; (b) ease of use; (c) functionality; (d) understandability; (e) overall impression; (f) recommendations for future modifications; (g) likelihood to use again; and (h) error and technical difficulties (VHB only).

Clinical in-person debrief: compare experiences using the PHB with the VHB, including preference of use and barriers or facilitators to use.

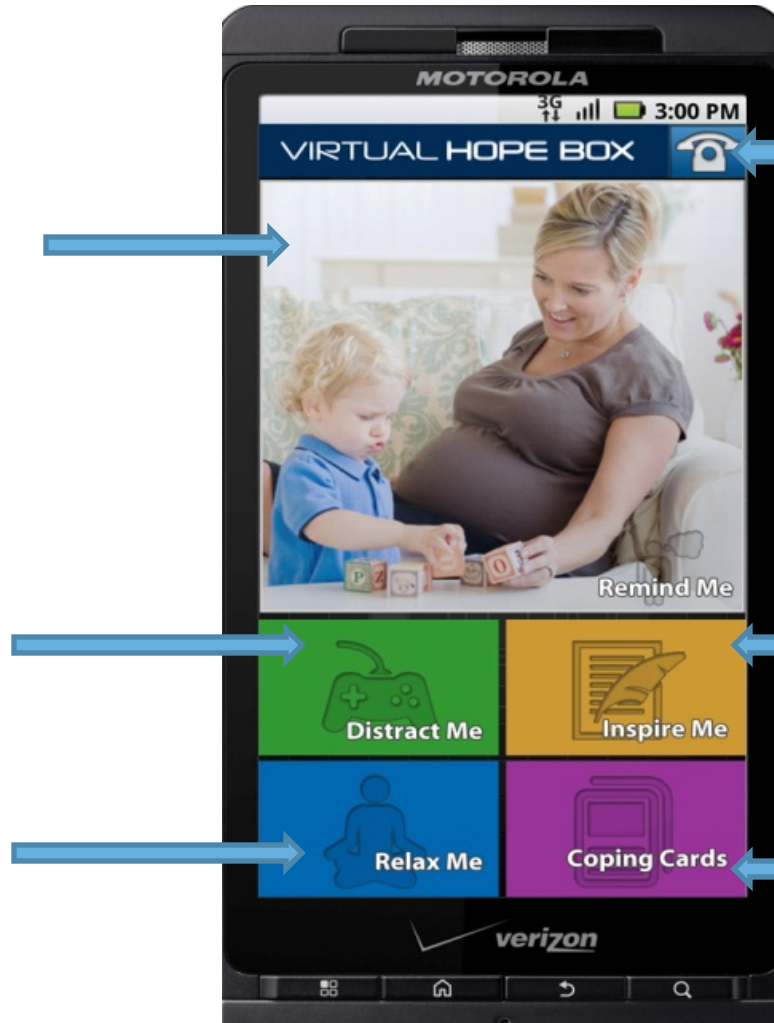
Clinician Focus Group: Clinician, RC and other staff perceptions of the VHB v PHB conducted by T2 staff.

T2 Virtual Hope Box

Focuses the user on cherished memories, reminders in digital media: Photos, videos, recorded messages, music.

Distraction pieces for the user: Activity Planner, and puzzles/word search games taken from user content.

Relaxation pieces, such as a deep breathing tool, progressive muscle relaxation, etc.

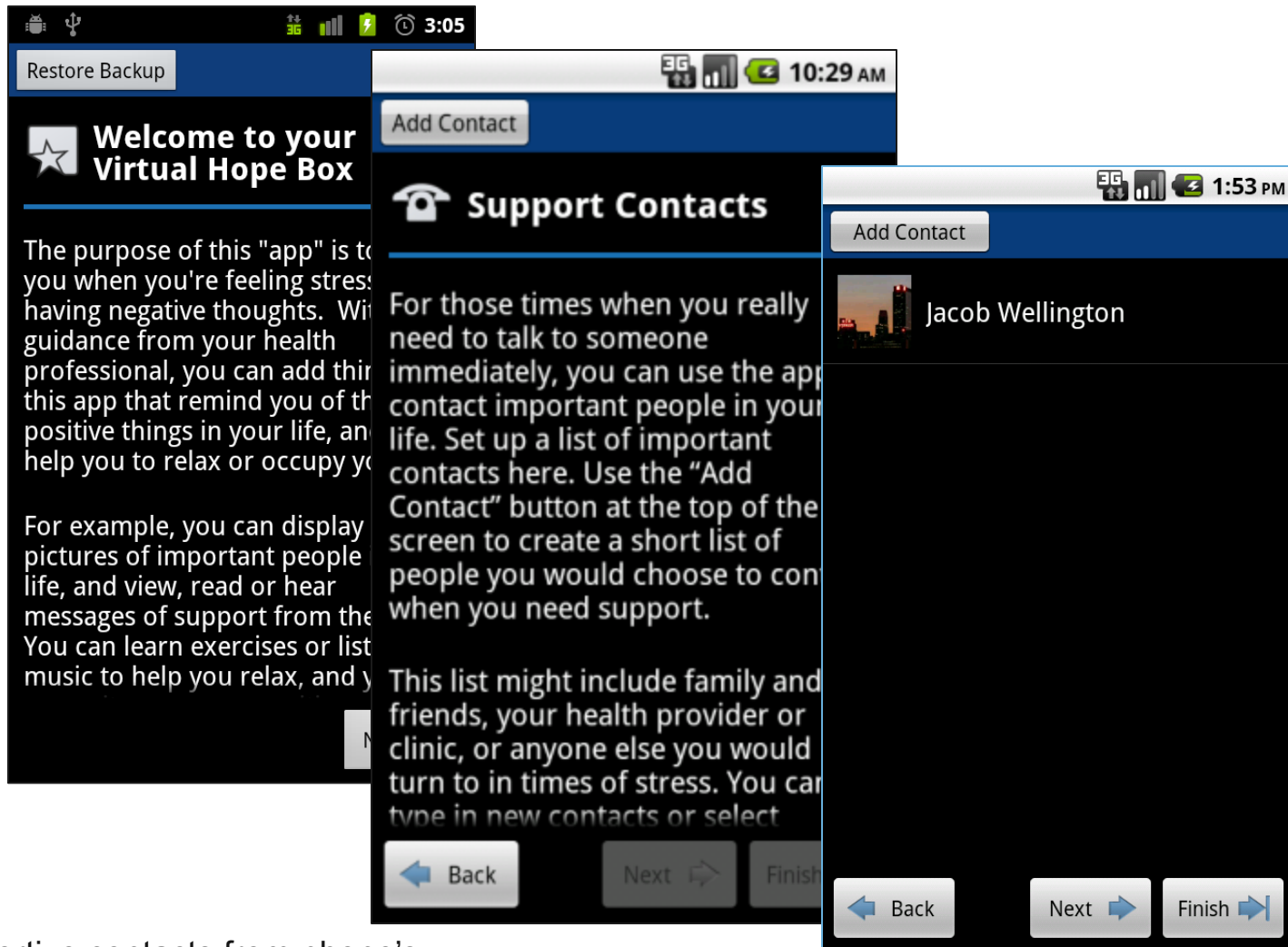


User customized support contacts, hotline info.

Preloaded inspirational quotes can be supplemented or replaced by personal quotes, family aphorisms, biblical phrases, etc.

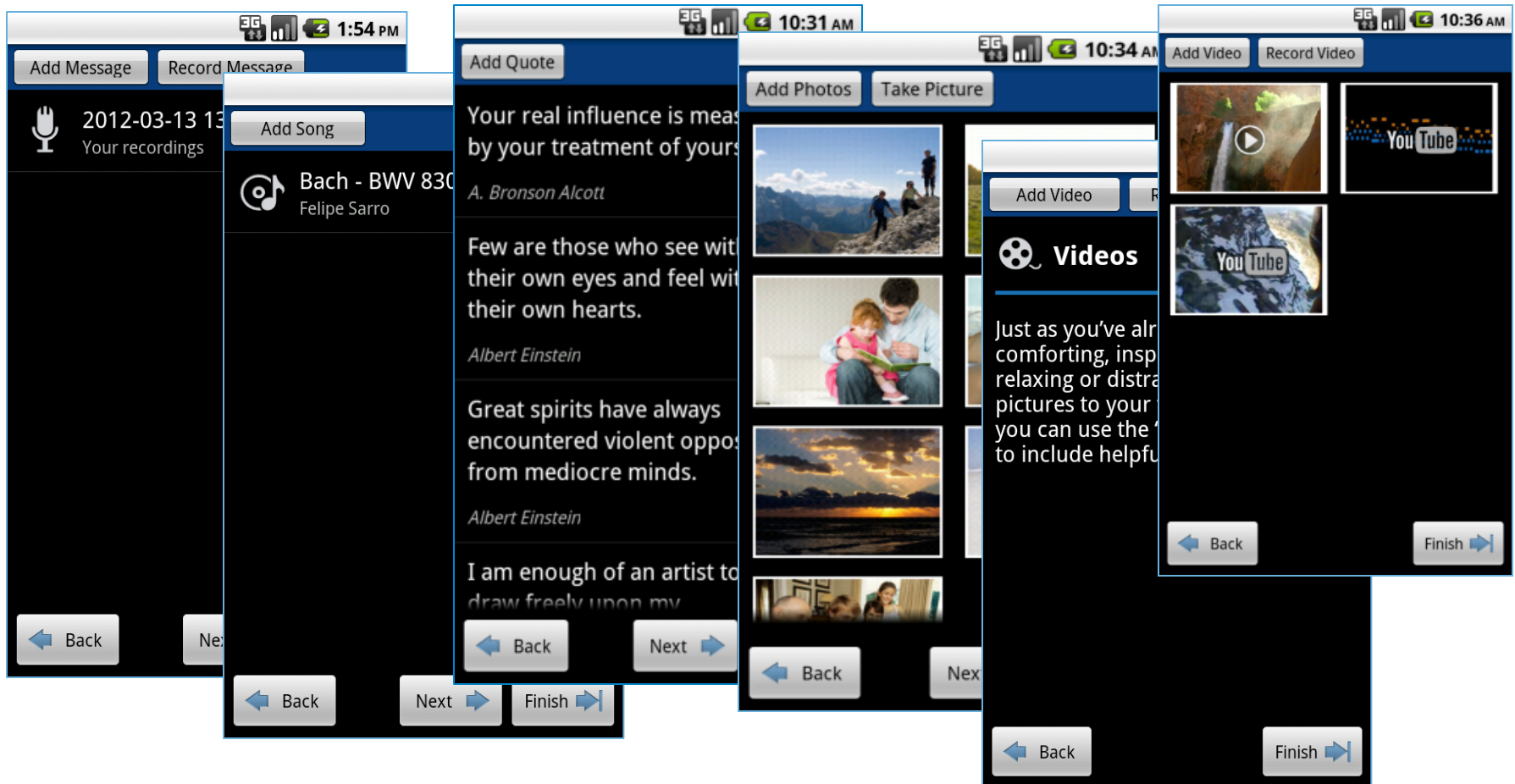
Coping Cards highlight adaptive thoughts and behaviors when in crisis or managing problematic core beliefs.

VHB: Construct & Customize



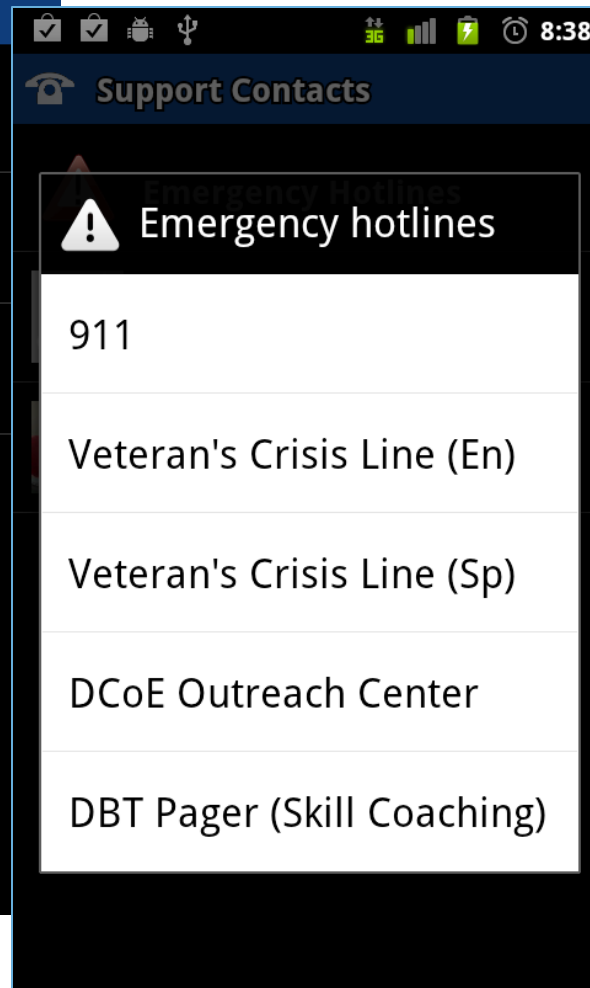
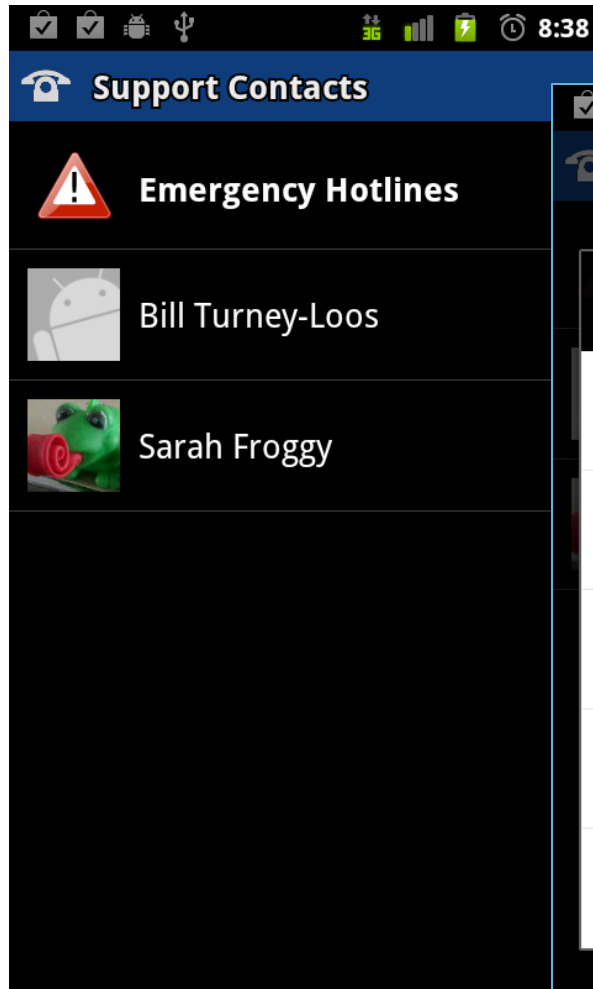
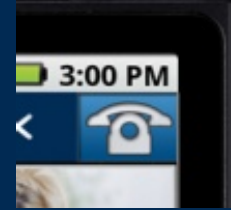
Add supportive contacts from phone's contact list or create new ones.

VHB: Construct & Customize (cont.)

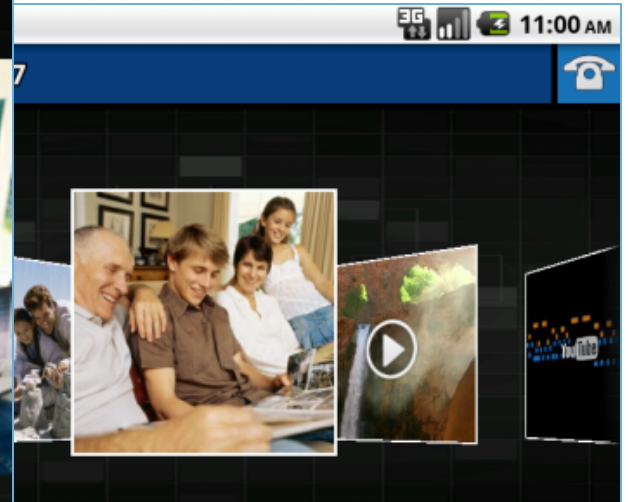
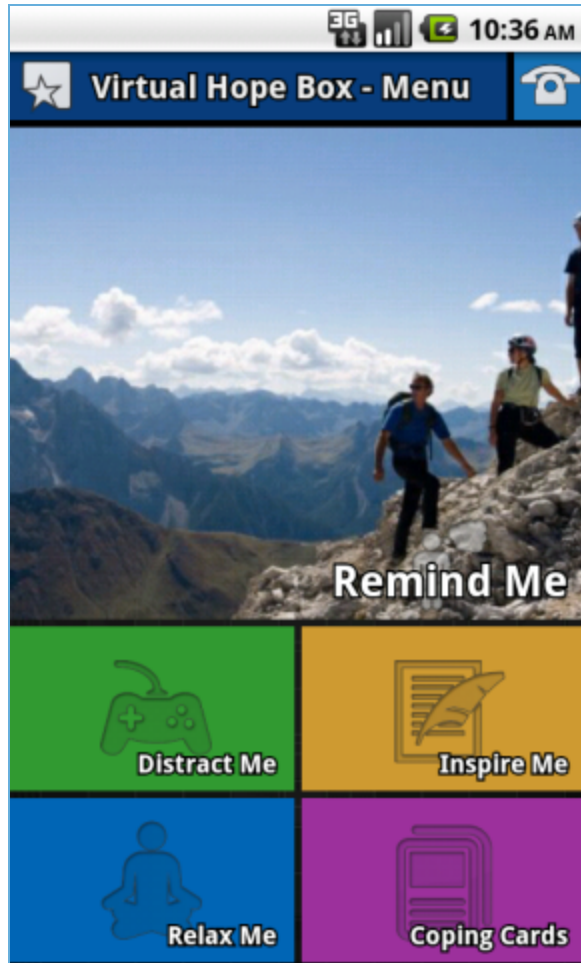
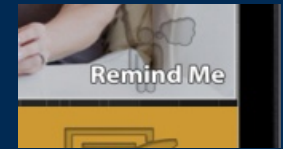


Add supportive, comforting, distracting, or relaxing audio, video, pictures, messages, inspirational quotes, or other media.

VHB: Support Contacts

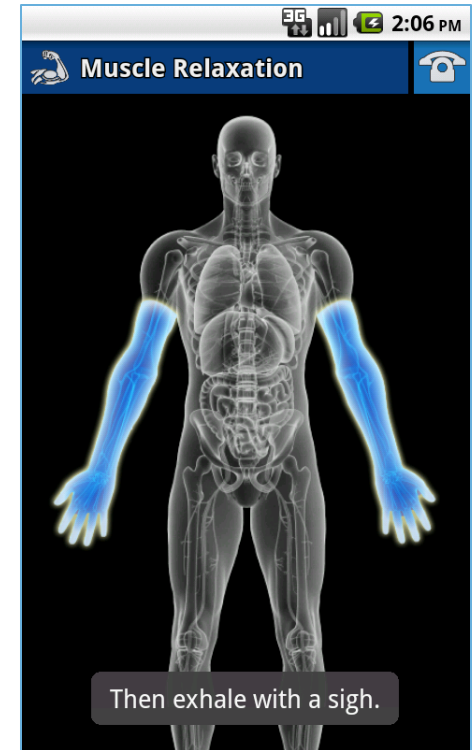
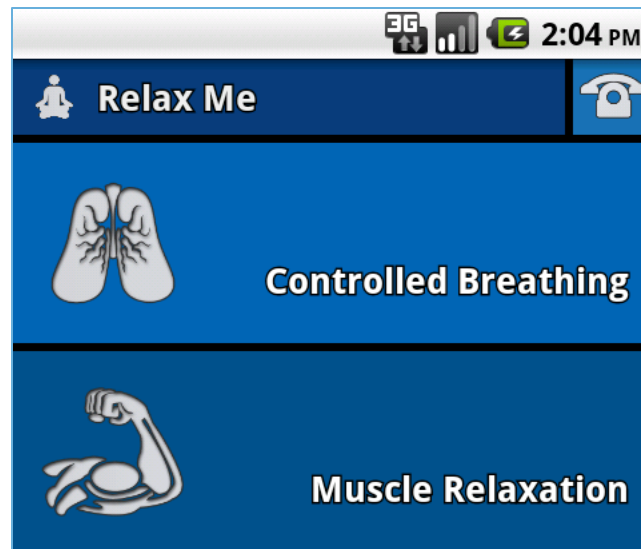
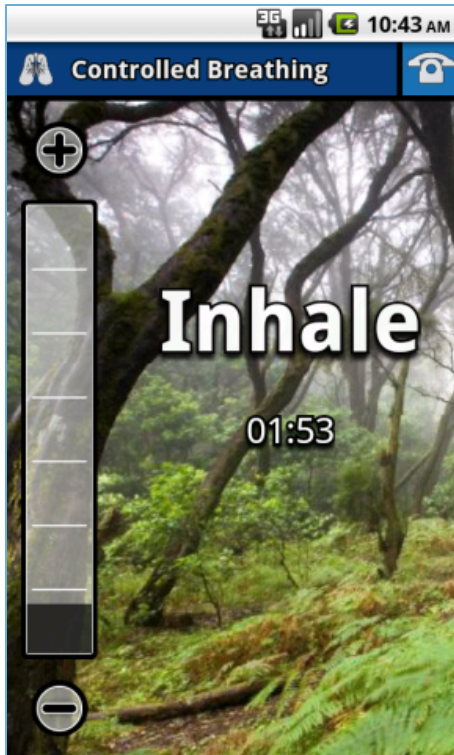


VHB: Remind Me



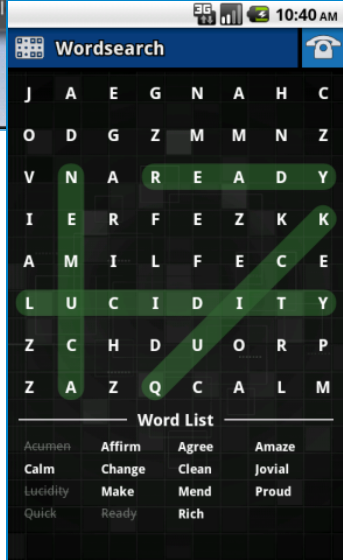
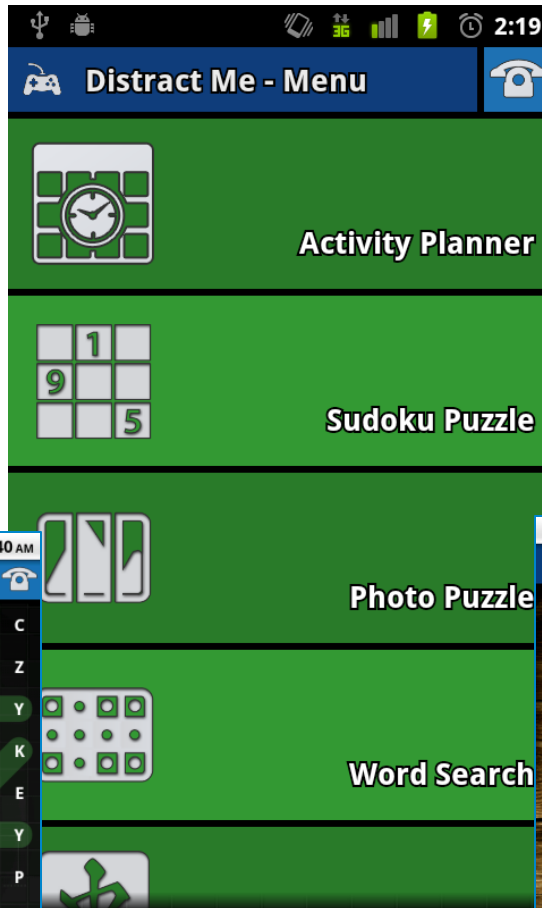
Select from collection of media in multiple formats. Set Remind Me to shuffle display.

VHB: Relax Me



Selectable timing and duration for inhale, hold, and exhale

VHB: Distract Me- Games & Puzzles



Puzzle photos and words extracted from user content

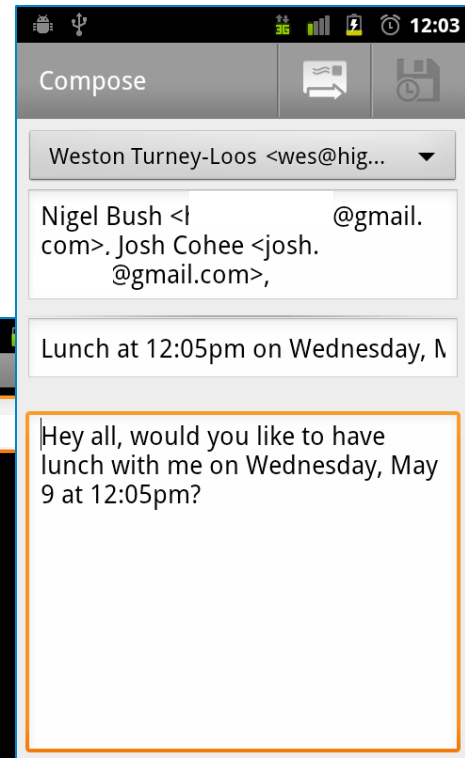
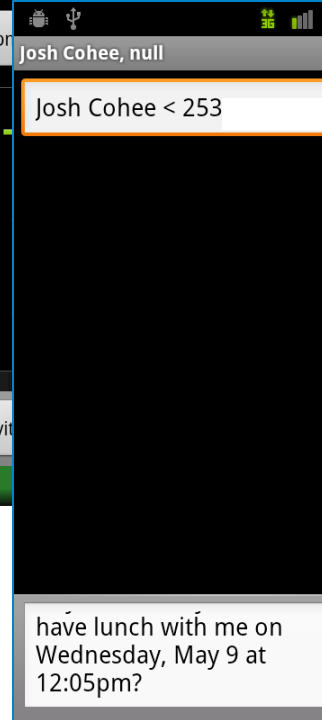
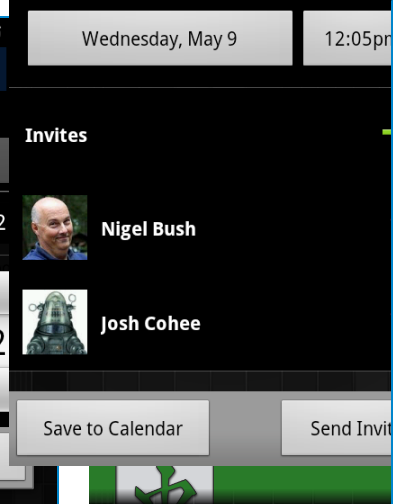
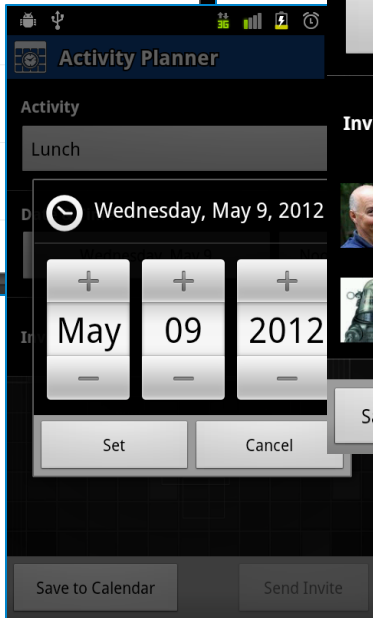
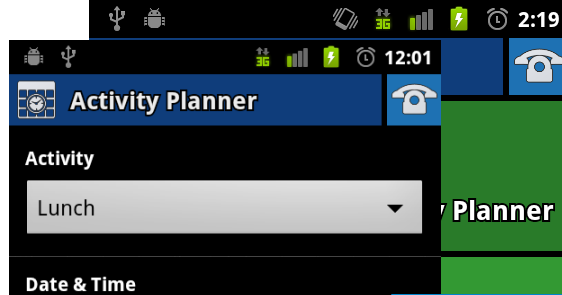
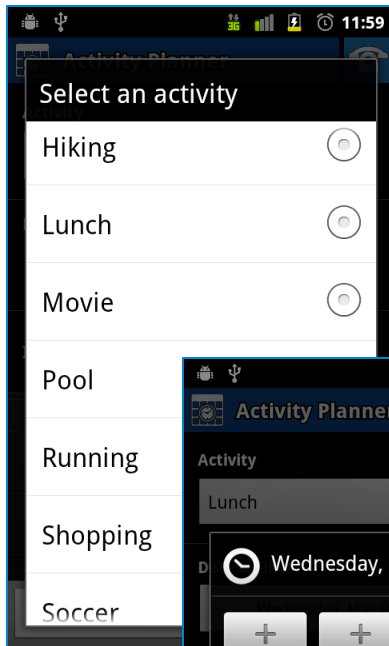


Selectable levels of difficulty

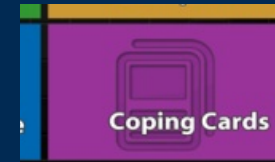
VHB: Distract Me- Activity Planner



Positive Events Scheduling

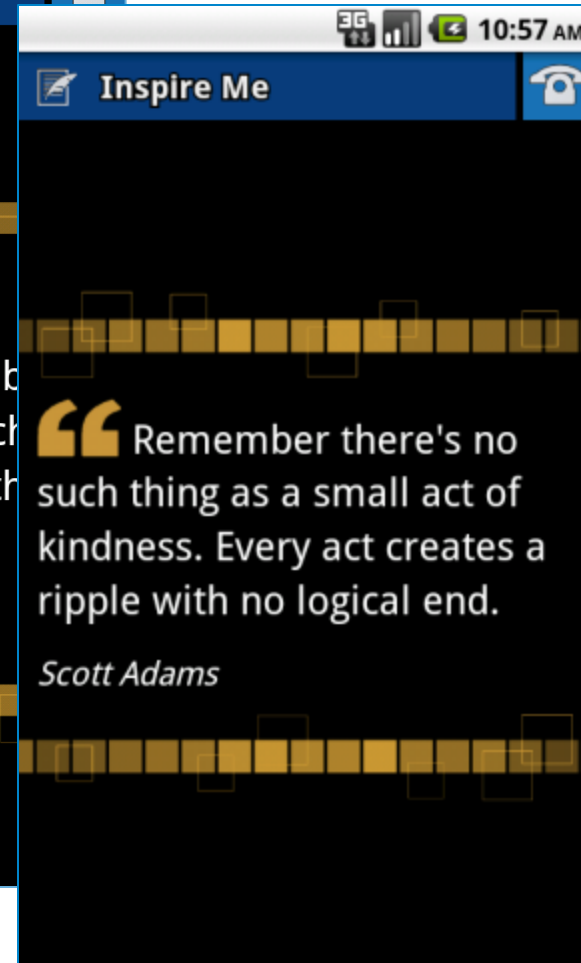
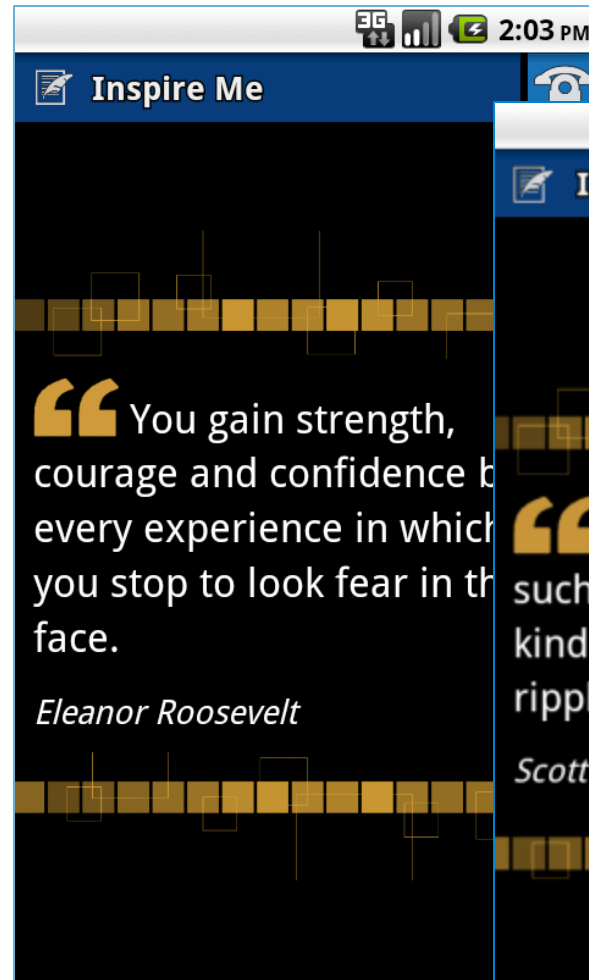
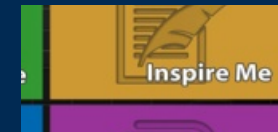


VHB: Coping Cards



The image shows two overlapping screenshots of a mobile application interface. The top screenshot is titled 'Coping Cards - Edit' and shows a list of items. The first item is 'I can't take the pressure of work and school and kids.' with an information icon to its left. Below it is 'Trapped, Erratic, Depressed' with an information icon. A section titled 'Positive Responses' follows, containing three items: 'This quarter is almost over.', 'My kids are the best.', and 'I have a vacation coming up in two months.' Each item has a minus sign icon to its left. At the bottom are 'Done' and 'Revert' buttons. The bottom screenshot is titled 'Coping Cards' and shows a preview of the first card. It displays the text 'I can't take the pressure of work and school and kids.' followed by 'Trapped, Erratic, Depressed' and a list of three positive responses, each with a green checkmark: 'This quarter is almost over.', 'My kids are the best.', and 'I have a vacation coming up in two months.'

VHB: Inspire Me





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