Calmer: Your favorite tools for managing anxiety, in one convenient location

Pamela Fokes
Iowa State University, pqfokes@iastate.edu

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Calmer

Your favorite tools for managing anxiety, in one convenient location.

HCI 598 | Fall 2017 | Quinne Fokes
PQFokes@IAState.edu | QFokes@gmail.com
“Pain is inevitable, suffering is optional.”

—Anonymous

Reduce some suffering today.
Overview

This application is a **portable toolkit**, for **aggregating and storing** references to or reminders to use **tools and techniques** chosen by the individual that are helpful in managing anxiety, and the depression that often accompanies. Users will be able to import and/or record **his/her favorite tools**, putting them on a mobile phone in a particular order for use in case of an “anxiety attack.”
defining the problem
Process

• Interview potential users about needs — generative (foundational) research in the form of contextual inquiry, using semi-structured interviews done remotely, with participants in their home environments

• Research and compare applications currently available

• Create story boards showing users in context of problem space

• Build an Affinity Diagram to help determine priorities for requirements

• List basic requirements

• List challenges and dependencies, review

• Create prototype

• Evaluate

• Iterate

• Repeat
What's an anxiety disorder?
No, it is not ordinary anxiety

• “Anxiety disorders differ from developmentally normative fear or anxiety by being excessive or persisting beyond developmentally appropriate periods.”

• “They differ from transient fear or anxiety, often stress-induced, by being persistent ... Most occur more frequently in females than in males (approximately 2:1 ratio).”*

*Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), 2013*
Anxiety Disorders affect 18.1% of adults in the United States.

(That’s approximately 40 million adults between the ages of 18 to 54).

* National Institute of Mental Health (NIMH). Apr 25, 2017
Collectively they [anxiety disorders] are among the most common mental disorders experienced by Americans.

One study estimated the annual cost of anxiety disorders in the United States to be approximately $42.3 billion in the 1990s, a majority of which was due to non-psychiatric medical treatment costs. This estimate focused on short-term effects and did not include the effect of outcomes such as the increased risk of other disorders.

— Greenberg et al, 1999
Try to empathize

It’s hard to imagine what it’s like to have an anxiety disorder unless you have one.

Example:
Let’s say that for you, a surprise meeting with your boss rates 2 to 3 on a scale of 10, if you’re a regular person, where 10 is when you’re facing a hungry tiger, and about to be eaten alive.

(You’d have a full on FIGHT, FLIGHT or FREEZE response at level 10.)
Try to empathize

But for people with generalized anxiety disorders (GAD), an event that’s a seemingly innocuous can elicit an unusually strong physiological response.

Example:
When a person with GAD has a surprise meeting with her/his boss, it can feel as though...
...there is a tiger in the room.
People with generalized anxiety disorders are not crazy, and they don’t imagine a tiger.

• They experience a heightened physiological response.

• They are “wired” differently and that can make them feel crazy, and oftentimes this leads to depression.

• There is no cure for GAD, just management, as with diabetes, blindness and other debilitating challenges.
Some good news is that mental health disorders are being talked about more openly, and more research is being done, and there are more solutions now than there were in the past.

One can hope the stigma will diminish.
There is no cure
For now...

People with Generalized Anxiety Disorders (GAD) use a range of tools to manage their anxiety.
Some of the Tools

Psychotherapy • CBT • DBT • Biofeedback • EMDR
Some of the Tools

- Writing and Journaling
- Prayer
- Art
- Mindfulness Practices
- Self-Talk
- Meditation
- Yoga
- Pranayama
- Mantras
- Acupuncture
- Music
- Exercise

Calmer
## Some of the Tools

<table>
<thead>
<tr>
<th>Medications</th>
<th>Supplements</th>
<th>Amino-Acids</th>
<th>Herbs</th>
</tr>
</thead>
</table>

Calmer

Quinne Fokes  415 482 7926  PQFokes@iastate.edu
The goal is...

To get the tools to the suffering person, or remind them to use their tools... and quickly
Scenarios
At work — without your reminders & tools.
The tools are scattered and not portable.
Scenario 3

Out and about — anywhere — but no helpful tools on hand.
Scenario 4

Despair, despair. What to do?

I can call Sam, I have his number.

No answer! What to do?!

Remembers to use one tool, but needs another.
Options
What’s available?

Applications in the same competitive space:
Many are useful...

Calmer is technique agnostic

Calmer aggregates the tools mature people are already using
Benefits and uses
Benefits

• Increased peace of mind

• Confidence in knowing you’ll have what you need just the way you want it, and when you need it

• Just knowing you have your tools close at hand may calm you -(cite evidence)
Use Case 1

Yikes I am so anxious, I'll grab my Calmer tools on the phone.

Let's see... need to hear about breathing.

In 1-2-3-4-5-6, out 1-2-3-4-5-6...... again....

Ahhhh... calm... able to cope.... PH levels adjusted... CO2 is normal.
Use Case 2

Oh no, boss is a jerk, my best friend is away, life is a mess, I'm a failure...arggh

Let's review my gratitude list.

Here's my kitty, ooooh nice!

My boyfriend's voice, telling me everything will be ok.

Ok, back to it! I feel better. I can cope!
I'm 30 minutes early for my interview...and freaking out!!!!

I've got my guided meditation here on my phone....I'll do it now, in the car!!

I feel ready! Relaxed, positive, confident. Look out world here I come. This interview will be great!
Use Case 4

The car is broken, my wife is about to have twins, my boss is a pain. I can’t take it anymore. What’s this “Calmer” app?

OH! All UI have to do is breathe... listen to this... in-out-in-out.

Gosh that helped! Here comes the tow truck.

OK! I’m going to play the breathing recording again... Then call my boss.
How would we know this application is successful?

• By how much it was used over a year or more
• By ratings on Likert Scale
• By user comments and ratings over time
• Poll therapists and psychiatrists
understanding
Generative research:

Three women were interviewed in their homes via a researcher located remotely, in depth, about the tools they use to manage anxiety disorder at present, and their potential interest in a digital tool that could aggregate their existing tools for later use on a mobile phone.
These women (potential users)

- Have an anxiety disorder or are highly prone to anxiety
- Have done therapy(ies) over time and know what works for them
- Have (analog) tools for managing anxiety
- Women in their 50s, 60s, 70s
- Not digital natives, but have become digitally fluent
- Use OS X and Androids, Macs and PCs
Potential user: Carrie

Music and images, I won’t believe self-talk in my own voice.

71, artist, college and graduate degrees, professor, yogi, home owner, married, has a cat, lives in Virginia.

Mac, tablet, iPhone.
Potential user: Anne

A list, including the Daily Word, notes from DBT (4), reminder to take a walk, and photos.

Anne
68, high level role in non-profit, active, home owner, divorced; California, has 2 cats

PC, Android.
Potential user: Margaret

Margaret
61, college degree, former critical care nurse, occupational health department manager, yogi, smoker, divorced, one grown son, Florida

Already remembers to practice breathing at onset of anxiety or panic attack.

Blackberry, PC.

A digital library of images, sounds and readings.
• Notes were made during interviews
• The content of the notes was analyzed
• Patterns emerged regarding what participants wanted
• These single pieces of information were organized in an affinity diagram, as shown over the next four slides
• An over-arching need was determined
Affinity Diagram

Single Pieces of Information

M. Image of St. Jude
B. Picture of tropical island w/sailboat from computer
C. Picture of fox
C. Cute animals
B. Picture of plants on
M. Pink camellia picture
C. Bunny picture
C. Cat picture

M. Pema Chodrin’s writings
B. Text of helpful readings such as The Daily Word
B. Written checklist of things to do for relief
C. Written reminder from pain mgt/biofeedback class
B. Notes from DBT especially 4th module
B. Phone list - numbers of support people
B. Reminder to take a walk
B. List of options
C. Reminder to breathe

C. A few strains of music
C. Reminder to breathe
C. Sounds pranayama teacher uses in class
M. Steve Halpern music
M. Audio of helpful readings - Pema Chodrin
M. Sanskrit Chanting
C. Sanskrit chanting Krishna Doodas music
Tibetan singing bowls
C. Ocean sounds
C. Sanskrit Mantra

B. Place to write notes

C. Youtube videos of “You’ve got Talent” - specifically Susan Boyle
C. Youtube video of Korean boy with beautiful voice - who has

Single pieces of information
Affinity Diagram

Common Themes

I want to see an image that I like, that will help me to feel better

M. Image of St. Jude
B. Picture of tropical island w/sailboat from computer
C. Picture of fox
C. Cute animals
B. Picture of plants on
M. Pink camellia picture
C. Bunny picture
C. Cat picture

I want to read things that will help me to feel better

M. Pema Chodrin's writings
B. Text of helpful readings such as The Daily Word
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M. Audio of helpful readings - Pema Chodrin
M. Sanskrit Chanting
C. Sanskrit chanting Krishna Dooas music
Tibetan singing bowls
C. Ocean sounds
C. Sanskrit Mantra

I want to write it out, reflect, which will help me to feel better

B. Place to write notes

I want to hear and see things that will help me to feel better

C. Utube videos of "You've got Talent" - specifically Susan Boyle
C. Utube video of Korean boy with beautiful voice - who has
Affinity Diagram

Specific Challenge

Show me how to get my audio files, image files and written information organized onto one place.

I want to see an image that I like, that will help me to feel better

- M. Image of St. Jude
- B. Picture of tropical island with sailboat from computer
- C. Picture of fox
- C. Cute animals
- B. Picture of plants on
- M. Pink camellia picture
- C. Bunny picture
- C. Cat picture

I want to read things that will help me to feel better

- M. Pema Chodrin's writings
- B. Text of helpful readings such as The Daily Word
- B. Written checklist of things to do for relief
- C. Written reminder from pain mgt/biofeedback class
- B. Notes from DBT especially 4th module
- B. Phone list - numbers of support people
- B. Reminder to take a walk
- B. List of options
- C. Reminder to breathe

I want to hear things that will help me to feel better

- A few strains of music
- Reminder to breathe
- Sounds pranayama teacher uses in class
- M. Steve Halpern music
- M. Audio of helpful readings - Pema Chodrin
- M. Sanskrit Chanting
- C. Sanskrit chanting Krishna Dosh music
- Tibetan singing bowls
- C. Ocean sounds
- C. Sanskrit Mantra

I want to write it out, reflect, which will help me to feel better

- Place to write notes

I want to hear and see things that will help me to feel better

- C. Utube videos of “You’ve got Talent” - specifically Susan Boyle
- C. Utube video of Korean boy with beautiful voice - who has

Common themes

Single pieces of information
Affinity Diagram

Over Arching Need

Organizing my tools so that I can discreetly access what I need in an emergency so that I can manage the situation and not feel panicky, nor be in a state of despair.

Show me how to get my audio files, image files and written information organized onto one place.

Over arching need

Specific challenge

Common themes

Single pieces of information

I want to see an image that I like, that will help me to feel better

I want to read things that will help me to feel better

I want to hear things that will help me to feel better

I want to write it out, reflect, which will help me to feel better

I want to hear and see things that will help me to feel better

M. Image of St. Jude

B. Picture of tropical island w sailboat from computer

C. Picture of fox

C. Cute animals

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B. Text of helpful readings such as The Daily Word

B. Written checklist of things to do for relief

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Tibetan singing bowls

C. Ocean sounds

C. Sanskrit Mantra

C. Utube video of "You've got Talent" specifically Susan Boyle

C. Utube video of Korean boy with beautiful voice - who has
Over-arching need:

“To organize my tools so that I can discreetly access my tools so that I can manage the situation and not feel panicky nor be in a state of despair.”
Must be easy to use and simple to understand during an anxiety attack.

**Tradeoff:**
May skip some features

**Benefit:**
More inclusive design
Audience: adults over 45, who may require reading glasses, and who are not digital natives.

**Tradeoff:**
More resources go towards addressing nomenclature, reducing number of steps, testing.

**Benefit:**
More inclusive design
Requirements

Must be able to use tools without logging in.

**Trade off:**
Privacy concerns

**Benefit:**
Faster access
concept
Imagine

Press one button and the perfect tool for calming in the midst of an anxiety attack appears, providing the *image, sound and/or text* that is just right for you, because you chose, in advance, the tool or technique that you find most helpful.
Unlike applications currently available, many of which support a particular method of managing anxiety, this application provides users with the means to aggregate a number of different kinds of tools, the ones that work for them, all in one convenient location.

• Calmer is tool and technique agnostic.

• Each user chooses to include and use what works best for her/him.
“Breathe in and out…slowly, deeply”

“Let’s think this through…..”

(5) Reminder 1

All is in divine order.
I’m exactly where I am supposed to be.
Things are working out beautifully even though
I don’t know how that is happening.
I am grateful for what is, and all is well.
Choice and immersion

The individual chooses whatever image, text, audio or video clip, in combination or alone, that helps to quell anxiety and/or lift despair.

The concept for Calmer borrows from best practices for virtual environments where more than one sense is engaged to create an immersive experience.
prototype
Tasks for Initial Design

1. Open the application and explore the seven tools that were built and loaded in case of anxiety attack

2. Change the order in which the tools appear

3. Build a tool by choosing an image, typing in text recording audio, naming the tool and confirming its position or order
Task One:
Using the tools in an emergency
Task 1

(1) BREATHE
Breathe in...one...two...three...four.
Breathe out...five...six...seven...eight

(1) BREATHE
Breathe in...one...two...three...four.
Breathe out...five...six...seven...eight
(1) BREATHE
Breathe in...one...two...three...four.
Breathe out...five...six...seven...eight

(2) Mantra 1
Om Shrim Maha Lakshmiyei
Swaha...
Task 1

(2) (Mantra 1)
Om Shrim Maha Lakshmiyei
Swaha...

(2) (Mantra 1)
Om Shrim Maha Lakshmiyei
Swaha...
(3) Friend #1
Now let’s think this through.
What’s the worst thing that can happen?
How likely is that?

Ok, what are some other options to consider?
Let’s just settle down and make a list...you can do that!
Task 1

How likely is that? What would you do then?

Ok, what are some other options to consider? Let’s
Task 1

(4) Sanskrit Chanting
(5) All is Well
All is well.
Everything is as it should be.
All is well.
Everything is in Divine Order.
Be at Peace.
All is well.
There is nothing for you to do except let go, breathe, and trust in the Universe.
All is well.
Take a deep breath.
All is well.
Breathe out.
All is well.

(6) Tibetan Singing Bowls
Task 1

(6) Tibetan Singing Bowls

(7) Cachilla Ruth 1
You’ve reached the end of the “Using Tools” task demonstrating different kinds of tools that might be included. Some include an image, text and audio, while others contain fewer elements.

There are three demonstrations:

1. Add a Tool
2. Using Tools
3. Shifting Order of Tools

Thank you for taking a look!
Task Two:

Changing the order of the tools
Task 2

Options ▼

Add Tool

Change Order

Edit a Tool

Update Library

Settings

Tibetan Singing Bowls

Calmer

Options > Change Order

1. Breathe

2. Mantra #1

3. Mantra #2

4. Friend #1 - de-catastrophize

5. After Midnight- music

6. Reminder #1 - Divine Order

7. CR

8. Tool

9. Tool
Task 2

Options > Change Order

1. Breathe
2. Mantra #1
3. Mantra #2
4. Friend #1 - de-catastro
5. After Midnight- music
6. Reminder #1 - Divine Order
7. CR
8. Tool
9. Tool
Task Two:

Building a tool
Task 3

Calmer

Options ▼

Build Tool
Change Order
Edit a Tool
Update Library
Settings

Tibetan Singing Bowls

Calmer

Options ▼

Build Tool
Change Order
Edit a Tool
Update Library
Settings

Start with:

Image
Video
Text
Audio
Task 3

Start with:

- Image
- Video
- Text
- Audio

We suggest starting with image if you have one.

If not, you can start with text or audio, and come back to an image later.

Starting with video is also an option, and takes the place of image and audio.
Task 3

Start with:

- Image
- Video
- Text
- Audio

Options > Build Tool > Image

Select an image
Task 3

Calmer

Options > Build Tool > Image

Select an image

Options > Build Tool > Title

Cancel

Title this tool

< >
Task 3

Calmer

Options > Build Tool > Title

Cancel

Save

Buddha-Sitting 1

q w e r t y u i o p

a s d f g h j k l

Z X C V B N M

123

space

return

Skip for now

Add Text

Buddha-Sitting-1:
Task 3

Calmer

Options > Build Tool > Text

Reminder: say ohm....
and practice breathing in
4 counts, breathing out 4 counts

Cancel | Save

Buddha-Sitting-1:
Reminder: say ohm....
and practice breathing in
4 counts, breathing out 4 counts

Cancel | Change Title | Save
Task 3

You can save your tool, write a new title, or start over by tapping the related blue "button" above.
Task 3

Calmer

Options > Build Tool > Audio

Skip for now
Add Audio
Record
From Library

Buddha-Sitting-1:
Reminder: say ohm.... and practice breathing in 4 counts, breathing out 4 counts

< >

Calmer

Options > Build Tool > Audio > Record

Skip for now
Add Audio
Record
From Library

Buddha-Sitting-1:
Reminder: say ohm.... and practice breathing in 4 counts, breathing out 4 counts

< >
Task 3

Calmer

Options > Add Tool > Audio > Record

Cancel | Save

Replay | Stop | Pause | Record

00:00:00

Replay | Stop | Pause | Record

00:00:45

< >>
Task 3

Calmer

Options > Add Tool > Audio > Record

Cancel  Save

00:00:45

Replay  Stop  Pause  Record

< >
Task 3

Options > Add Tool > Position

Position #1

123 space return

Save

(1) Buddha-Sitting-1: 
Reminder: say ohm... and practice breathing in 4 counts, breathing out 4 counts
Task 3

(1) Buddha-Sitting-1:
Reminder: say ohm.... and practice breathing in 4 counts, breathing out 4 counts.

Good job! You’ve created your first calming tool.

To create another tool, tap on “options” above, and select “Build tool.”

(1) Buddha-Sitting-1:
Reminder: say ohm.... and practice breathing in 4 counts, breathing out 4 counts.
evaluation
Specifically, the researcher wanted to learn:

- The number of tools to set as default
- Which types of tools preferred
- What kinds of mental model users have for library
Evaluation instruments

- Wireframes from Sketch 4.71 viewed on participant’s desktop browser using InVision
- Screens prepared for iPhone 6
- Zoom as the remote software
- Emailed survey
Participants

- 3 from previous generative research (women in 60s, 70s with GAD

  Plus 3 more as follows:

- 1 with GAD female, 50s
- 1 with high levels of anxiety, male, undiagnosed, late 40s
- 1 going through significant life changes and experiencing high levels of anxiety, male, 60s

Gender: 4 women, 2 men
Gathering data for tasks 1, 2a and 2b

To elicit underlying **attitudes, reactions** and **reasoning** on the part of users, formative, evaluative research was conducted with:

- Usability testing
- A cognitive walkthrough with moderator
- Plus semi-structured interview

And using:

- InVision prototypes
- Moderator guide
- Note-taking
Gathering data for task 3

• Usability testing on their own (now that participants are familiar with InVision prototypes)
• Responses to emailed survey questions
Evaluating the Data

- Reviewing notes after each session
- Summarizing comments
- Analyzing results, — looking for themes and patterns
Results

• Overall this application was well-received.

• With a few small changes to the “edit tool” and “settings” sections, plus adding a “library,” re-testing can take place.

• While the audience comprises a small niche, with the addition of a number of default tools, there is potential for a broader audience of GAD sufferers, to include those recently diagnosed (as opposed to those who have been managing GAD for years).

• *Separately, the application may have other uses*
Results – Using the Tools task 1

• 4 of 6 participants recognized graphic as audio activation
  ...2 said it might be volume

• 2 of 6 participants needed prompt to find scroll bar

• 3 participants seemed less engaged viewing soundless tool
  ...3 participants read to themselves or out loud and one articulated the benefit of so doing
Results — Using the Tools \textit{task 1}

- 5 became animated when they saw the screen with Tibetan Singing Bowl
- 1 thought it was an offer to purchase bowls
Results — Meaning of Menu Items task 2a

Add Tool or Build Tool?
Change Order
Edit Tool
Update Library
Preferences—or Settings?
All 6 participants understood the drag and drop aspect of the interface.

4. Friend #1 - de-catastrophize
Results — Add tool/Build Tool task 3

Having walked through two tasks with the moderator may have helped participants in understanding the add/build task on their own.
Results — Add tool/Build tool task 3

1 person was confused by “position.”

Additionally, showing the active and focus states in the prototype led to some minor confusion.
Participants only want to use 1 or 2 tools (when having an anxiety attack) before switching from tool view to list view.
Considerations for next iteration

Reconsider whether adding to the library is easily accomplished on the phone—could this be a mobile only application? Or build the library to function fully on the desktop, partially on the mobile, with the following capabilities on desktop:

- User to have the ability to add components to library
- Include default tool components: audio clips, videos, images and text
- Include complete tools that are not currently in use.
Future opportunities

This *immersive* framework for supporting a shift in a person’s emotional state, thinking, action could also work well in other environments, such as:

**Physical therapy:**
Reminding patients about their exercises using images, words, audio, video.

**Changing other habits (behavioral health):**
Reminders in the form of images, text, audio, video.
Research methods

Usability testing with think aloud protocol at formative stage

• **Advantages:**
  - Interviewer hears thinking, reactions, and reasoning of participants

• Provides a very rich set of qualitative data to be sorted and combed, revealing possible patterns, understandings

• **Disadvantage:**
  - Takes time, careful interviewing
Rich qualitative data was gathered, and direction for modifications provided.

- Qualitative analysis was accomplished by debriefing after usability sessions (tasks 1 and 2), and by using a spreadsheet listing each participant’s responses to the questions. Answers to survey questions after task 3 were added to spreadsheet and analyzed along with data from tasks 1 and 2.

- The study may be repeated using the same questions after design changes are made.

- New responses could be evaluated in comparison to the answers from this first study and further iterations planned.
Assigning levels of severity is useful

One aspect of evaluating that was particularly helpful was going through the process of assigning a level of severity to each problem. Even though it is a somewhat subjective process, it helps with the planning of next steps by providing data to use in determining priorities and timing.

Pausing to set priorities is key to successful project management and allocation of resources.
Next Steps

Changes:
1. Add has *(already)* been changed to Build (Tool)

2. Colored area has *(already)* placed in image area when there is music only

3. Preferences has *(already)* been changed to Settings; add Settings section

4. Consider *not* setting the “Position” when building tools

5. Add modal dialogs providing positive feedback

6. Clarify what Edit Tool does and add this section

7. Clarify tasks possible in Library and add this section

8. Rework the interface so that after using 2 tools,* the default is to show the user the list of tools

* Default; can be reset under settings menu
References:

American Psychiatric Association, Ed. (2013). *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition.* Generalized Anxiety Disorder 300.02 (F41.1) Pearson, USA.


Thank you

Calmer

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