

Undergraduate Thesis Prospectus

Managing Anxiety through Mobile Application Training Suites

(technical research project in Computer Science)

Social Stigmas and Fear: Normalization of Mental Health in the United States

(STS research project)

by

William Ngu

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technical project collaborators:

Everett Adams

Jeffrey Gerkin

Danielle Newman

Jacobo Pacheco

Brady Page

Daniel Zarco

On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

signed: _____ date: _____

approved: _____ date: _____
Peter Norton, Department of Engineering and Society

approved: _____ date: _____
Ahmed Ibrahim, Department of Computer Science

General Research Problem

How can mental health be managed more efficiently?

Mental health is not only mental disorders; it is “a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community” (WHO, 2018). If mental health has deteriorated, then a person should not be considered healthy: just as if someone was physically ill. Management of this vital part of health is of critical importance to the functionality of people as a whole, and it should be treated properly as if it was a physical ailment.

Managing Anxiety through Mobile Application Training Suites

How can a mobile application training suite relieve the user's anxiety? Our capstone team will be working on this project under Professor Ahmed Ibrahim of the Computer Science Department. We will work with MindTrails, a UVA research initiative, to create an application that can collect data from the user's phone through accelerometers, GPS, and heart rate sensors. This data will be used in addition to the existing data collected by MindTrails to create trainings that prepare the user to better handle their anxiety. MindTrails provides cognitive bias modification interventions in order to relieve a patient's anxiety. According to MindTrails, cognitive bias is the tendency to “pay attention to, remember, and interpret things differently when processing information tied to your emotional responses” (MindTrails, 2019). By setting up a suite with small training sessions, participants can change their cognitive biases to help prevent anxious thoughts. The American Psychological Association analyzed the effectiveness of

short training sessions on anxiety and found that “after just eight 15-minute sessions... 72 percent of patients in the treatment group no longer met diagnostic criteria for social anxiety disorder, compared with 11 percent of patients in the control group” (Weir, 2011).

Currently, MindTrails offers their training sessions through a website platform. While the MindTrails team has had success with getting users to register for the study, they have faced problems retaining users until the end of the study. They have tried to fix this by sending email and text reminders and by offering gift card rewards for completing multiple sessions. While this has moderately increased returning users, it does not keep enough participants to warrant the cost of the gift cards. Another problem that MindTrails has faced is meeting the user’s needs during spikes in anxiety or stress. Accessibility to the website in these situations is not always perfect, as participants may not have access to a web-enabled device or Wi-Fi network. Due to the structure of the MindTrails training suite, having a constant access to sessions is key to the overall success of the program.

Application Design

In order to solve these problems, our capstone team has been tasked with creating a cross-platform mobile application for MindTrails. The goal of this app is to better address the problems of user retention and session accessibility that MindTrails currently faces. The retention rate can be improved through system notifications that remind the user of their available sessions. These notifications would lead the user directly to their current sessions. This would improve upon the current process that requires the user to check for an email or text message, log into the website, and then navigate to the desired sessions. The app will resolve

accessibility problems by storing the user's current working sessions locally, allowing them constant access to MindTrails in the absence of an Internet connection.

Application Requirements

Gathering requirements is essential for the overall success of our project, as the requirements we gather will determine the work done within the time frame of the capstone project. Quality requirements are important to ensure that we resolve the problems that originally created the desire for a mobile MindTrails app. Since MindTrails personnel will maintain the app after our capstone project completes, it is important that our build is aligned with the overall goals and skills of the MindTrails development team. Our requirements are broken into three sections: minimum, desired, and optional.

Minimum Requirements: Functionality required by the end of the Fall 2019 semester

- Authenticate users using login information
- Perform any tasks available on the website within the mobile application
 - Be able to complete questionnaires
 - Be able to complete quizzes
 - Be able to complete training
- Give users reminders for available training modules
- Cross-platform availability (iOS and Android)
- Have user information remain private and secure

Desired Requirements: Functionality required by the end of the Spring 2020 semester

- Notify users when an intervention may occur
- Have access to training and intervention sessions without Internet connection and sync information with the cloud upon reconnecting to the Internet
- Have the application read mobile sensor data (GPS, accelerometer)
- Optimize the user experience for mobile platforms
- Optimize screen layout for both portrait and landscape views
- Utilize the same API endpoints to supply data to both web and mobile platforms
- Utilize the Sensus API to collect sensor data

Optional Requirements: Functionality that is wanted, but not required

- Integrate with wearable technology
- Login using fingerprint or face ID (on applicable devices)
- Give users the option to manually sync progress between web and mobile platforms
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Social Stigmas and Fear: Normalization of Mental Health in the United States

How have advocates of mental health helped in reducing the stigma that seeking mental health is “not normal”?

Seeking mental health is daunting for those that want it. People are reluctant to reach out for help fearing for how they will be judged by their peers and society as a whole. There is a

stigma that those that receive mental help have something critically wrong with them, and that prevents those that want help from trying. There are people who try to fix their mental health issues, but avoid being officially diagnosed to avoid being seen as someone out of place with society. People with mental health issues tend to underreport their health problem; in an example of depression, “36.5% of people observed using depression drugs in the administrative data do not report that they have been diagnosed with either depression or anxiety”, while the average of all other diagnoses at 17% (Bharadwaj 2017). These people care for their own well being but are afraid of being ostracized by others in the process, and then there are those that don’t try and help themselves at all with the same fear. There are also others that suffer a self-stigma where they don’t want to believe something is wrong with them. For people that believe their mental illness is something horribly wrong with them, it can lead to problems such as believing mental illness stereotypes, losing self-esteem and self efficacy, which end up in resulting in behavioral consequences like not applying for work (Thornicroft, 2016). These effects can lead to more behavioral issues that affect relationships, education, and work and can limit opportunities like “loss of income, unemployment, reduced access to housing or health care” (Thornicroft, 2016). Mental health has a problem with the stigma that is attached to them, and this interferes with the help people can receive, and when it is left untreated, it gets worse. People are then less likely to seek help, and it becomes a self destructive cycle. The stigma attached to people is not only social, it is also internalized.

To combat social stigma, groups like Active Minds, teach the younger generations about mental health. Active Minds is a nonprofit that “[focuses] on students and young adults from ages 14-25” . It seeks to change how “mental health is talked about, cared for, and valued in the

United States” (Active Minds, 2019). A study over many different countries found that students from highschools and colleges like being educated on mental health issues as a group rather than through direct intervention, but despite the preference, four weeks later, it was discovered that those improvements were diminished or lost (Thornicroft, 2016). College students differed in that they actually retained the favourable attitude and knowledge (Thornicroft, 2016). Allocating resources to helping University students maybe the more efficient choices in who in the younger generation to teach. The study shows that a certain level of maturity and more life experiences would more likely help students understand why mental health is important and normal.

For the general public, the situation is slowly being fixed. Educational and social contact interventions with the public has significantly improved knowledge and attitudes towards mental health, but more so in social contact (Thornicroft, 2016). People have been receiving understanding of what mental health is and how it important it is, and it has been working. Groups such as the American Psychiatric Association Foundation (APAF), American Counseling Advocacy (ACA), and the National Alliance on Mental Illness (NAMI) aim to remove the social stigma in the general population. It contracts with companies to relieve the stigma in the workplace, so those who need help will seek it. NAMI is the “nation's largest grassroots mental health organization” which now is the “nation’s leading voice on mental health” (NAMI, 2019). It characterizes mental health care as a necessity. ACA is a counselor advocacy. It contends that counseling “empowers diverse individuals, families, and groups to accomplish mental health wellness, education, and career goals.” All of these groups help bring a voice to those that have mental illness and those that want to receive mental help in times of need. Mental health is largely known today, but it's still a taboo subject and most people do not know enough about it to

help those struggling with any kind of mental strains, mental illness or not. Discrimination against mental health still holds those that need help back from receiving it, but through more advancements in giving people the knowledge of what it truly is, then perhaps those that need help it won't fear the stigma of others or themselves anymore.

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