

The Companion



AN APP THAT NEVER LETS YOU DOUBT

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Abstract

Obsessive compulsive disorder (OCD) was once thought to be extremely rare, but recent epidemiological studies have shown it to be the fourth most common psychiatric disorder (after substance abuse, specific phobias, and major depression). Obsessive compulsive disorder (OCD) is a debilitating neuropsychiatric disorder with a lifetime prevalence of 2 to 3 percent and is estimated to be the 10th leading cause of disability in the world [1]. Patients with OCD experience recurrent, intrusive thoughts (obsessions) and/or repetitive, stereotyped behaviors (compulsions) that last for at least one hour per day and significantly interfere with the individual's normal level of functioning. The intrusive obsessional thoughts cause marked anxiety, and patients often describe their compulsions as efforts to reduce or neutralize these disturbing thoughts [2]. Time-consuming obsessions and compulsions often distract from tasks at hand and significantly impair an individual's attention and concentration. "The Companion" app is designed to help the patients to reduce their intrusive thoughts (obsessions) and repeated compulsiveness in other words reducing their obsession for doing the same work repeatedly as they often fear if the work has been done correctly or not. This will help them also overcome time-consuming obsessions and compulsions which often distracts an individual's attention and concentration.

Background

Obsessive Compulsive Disorder is a serious anxiety-related condition where a person experiences frequent intrusive and unwelcome obsessional thoughts, commonly referred to as obsessions [3]. Obsessions are very distressing and result in a person carrying out repetitive behaviors or rituals in order to prevent a perceived harm and/or worry that preceding obsessions

have focused their attention on. Such behaviors include avoidance of people, places or objects and constant reassurance seeking, sometimes the rituals will be internal mental counting, checking of body parts, or blinking, all of these are compulsions. Compulsions do bring some relief to the distress caused by the obsessions, but that relief is temporary and reoccurs each time a person's obsessive thought/fear is triggered. Sometimes over time the compulsions can become more of a habit where the original obsessive fear and worry has been forgotten, in this instance compulsions are often completed to enable the individual to feel "just right", the key word being "feel". Obsessive-Compulsive Disorder presents itself in many guises, and certainly goes far beyond the common perception that OCD is merely a little hand washing, checking light switches or having spotless houses or a characteristic of someone who is a little fastidious. In fact, if a person is suffering with Obsessive Compulsive Disorder then it will be impacting on some or all aspects of their daily life, sometimes becoming severely distressing leading to some nature of impairment or even disablement for hours at a time, each and every day. It is for this reason and level of impact on a person that makes OCD a disorder.

The condition can be so disabling that back in 1990 the World Health Organization ranked Obsessive-Compulsive Disorder in the global top ten leading causes of disability in terms of loss of income and quality of life. In fact back then it went on to suggest that OCD was the fifth leading cause of burden for women in developed countries.

OCD is often a chronic disorder that produces significant morbidity when not properly diagnosed and treated. The mainstay of treatment includes cognitive behavioral therapy and medication management. The use of clomipramine in the 1960s and then the introduction of serotonin reuptake inhibitors in the 1980s represented important advances in the pharmacologic

treatment of OCD. Despite effective treatment modalities, many patients demonstrate only a partial response or are resistant to available medications.

"The Companion" app is designed to address these problems where users can list their daily activities that they completed on a task list. Each task on the task list will include a timestamp, description, and picture which ensure the users that they have completed the task successfully. People with all ages with minor to severe OCD can use the app for combating the repetitive behaviors.

Problem Statement

Users are unsure and obsess over tasks that they did or did not do. This causes them to worry, become anxious, and increases their compulsion. They need certainty in their tasks so that they grow confidence that they finished their tasks and so that they don't worry. There are some ways in which people cope with OCD.

People with OCD use various methods to help find solutions to their problems. One way is psychological evaluation which determines if someone has OCD. Another way is Cognitive Behavior Therapy (CBT) in which patients visit their therapist's office for diagnosis. Also they use prescribed Medications from a physician or a psychiatrist. There are existing technologies that provide some of these functionalities.

There are some applications that aid people who have OCD. One is NOCD which provides online therapy for OCD. There is GG OCD which evaluates negative or positive impacts on thought. Also iCounselor which rates the frequency and strength of OCD. In addition, OCD Anxiety Graph tracks a user's mood as it relates to anxiety and OCD. Furthermore, there is

TalkSpace for users seeking online psychotherapy. Finally, CBT Designed to help users cope with depression and anxiety.

We can see that these existing technologies include Online therapy, Mood tracker, evaluation of negative/positive impacts on thought, and frequency and strength rating of OCD. Although many of these applications serve different and beneficial purposes, they have many drawbacks as well.

Many OCD applications have major problems. These problems include subscription fees, limited time to talk therapists, non-active participation to combat their issues, Complicated use, Discrimination of patients, Feelings of inferiority and guilt felt by users, Specific needs are not met for users, and Rude and apathetic behavior towards patients.

Even though the number of OCD patients are increasing at a high rate, there isn't many free apps out there to combat specifically OCD, and the existing apps have too many options to follow since most of them comes with focusing on other disorders which often overlook the primary needs of the people who is suffering OCD. Even though apps like "iCounselor: OCD Review", "OCD Anxiety Graph", "OCD Challenge", and "TalkSpace" build towards patients with OCD but combating the daily routine of an OCD patient, their role is not sufficient enough.

"The Companion" app's sole purpose is to help patients with OCD and their daily needs. The app is designed to focus on intrusive thoughts (obsessions) and repeated compulsiveness where users can list their daily activities and each time they complete the activity, they can confirm the task, and each time they confirm the task, our app will record the activity with a timestamp which ensure the users that they have completed the task

successfully. People with all ages with minor to severe OCD can use the app for combating the repetitive behaviors.

Rationale

Our Proposition (The Companion)

The rationale for this is that people who have OCD deal with excessive thoughts that result in excessive and/or unusual habits. This app will record completed tasks and activities. In case users are doubtful, we will require photographs to add the task in the task list. The photographs will serve as proof of the users' task completion. It can count compulsion as well. Users will be notified how many times they visited the app with a positive message. There will be a weekly report of their compulsion as well. The goal of this application is to eventually help them overcome their excessive habits with more productive and organized habits.

Why we are different

Other applications that help combat OCD do not focus on the daily routines of the user. Some apps are therapy-based such as NOCD and TalkSpace. Users' experience with therapy-based apps is poor. Moreover, Our app allows users to play an active role to combat their problems. Users have control over what they do by taking pictures as proof so that they don't obsess or worry.

Design

The design of our app is very simple. To use this app, users need to create an account first. To create an account, they need to provide an email address and password. Also there will be a disclaimer which states that this app is not a therapeutic tool, it is a unique task manager on the registration screen for acknowledgment . In case they forget their password, they can reset it by clicking on 'Forgot Password?' hyperlink and they will receive an email. They can set up the new password by following the link that was sent to them by email. After login in the user will be prompted to the “Dashboard screen” which will contain a task list of the tasks the user completed. Users can add tasks by clicking on the plus icon which is located on the bottom center of the “Dashboard screen”. After clicking the plus icon, the “Add Task” screen will be prompted, and the users have to add both the description of the task and the picture. If the users choose to only put description or picture then the app won't register the task to the task list and it will remind the users to add both description and picture.

After successfully adding the task to the task list, users can see their task information will appear in the task list with time of completion. If the user clicks on any specific task on the task list, the “Confirmation screen” will appear with both details, picture, and time of completion (time stamp). Also the app will also congratulate the user for completing the task to boost their confidence.

the user which task they visited most on that week. The weekly “Compulsion check chart” resets every week.

Users can navigate to the “Profile page” by simply clicking the user icon on the “Dashboard Screen”. The “Profile page” contains “Compulsion check chart”, “Contact Us”, “Donation”, “Enter name” and “log out” functionalities. If the user needs help they can reach out to us by clicking the “Contact us” option in the “Profile screen”.



Figure 2: “Contact us Screen”

We also accept donations for further development of our app and the users can contribute by clicking on the “Donation” option.

Technology Solutions

React native

We used 'React' to build our app's interface. React is an extended library of JavaScript. We chose to use React because it allows us to make reusable UI components. As a result, our code will be easy to understand and debug.

JavaScript

For the backend, we used JavaScript because of its easy scalability. Also, it offers a full stack. Another reason for using JavaScript is the availability of built in functions.

Expo-CLI

Expo-CLI gives an environment where we can code once and it will work for both the android and ios [4]. In this way, programmers do not need to code multiple times for different operating systems. Also, this platform allows us to use some components like 'Expo-Camera' which is a convenient way to take pictures.

NPM

For modular packages, we used NPM. NPM is a node package manager. It is basically used for managing dependencies of various server side dependencies. We can manage our server side dependencies manually as well but once our project's dependencies grow it becomes difficult to install and manage.

Expo-go and Xcode

Besides the emulator, we also tried our app in physical devices. For that, we installed expo-go in android and Xcode for ios.

Firestore

We used Firestore so that we could store the login credentials, passwords, tasks, pictures, and compulsion counts.

GitHub

We used GitHub to collaborate with team members and merge our work efficiently.

Evaluation of Users and Partners

We spoke with Mohammed Hassan [5] about our application design and functionalities. Mohammed Hassan is an EQ Coach for CEOs and Founders. He is a psychotherapist. Also, he is a talent management consultant. He really liked the functionality of our app and gave some criticism on our design. We created a survey for people so that we can get feedback on our functionality and design.



Figure 3: Survey for the Interface

People thought the app functionality will be very useful for people with OCD, but had many criticisms on the app design. In addition, we interviewed people with OCD so that we could get feedback from them on our app. They thought our app functionality was good but recommended that we add some features such as, compulsion check and refreshing the task list each day. They also heavily critiqued our original design. After we took their feedback into consideration, we made significant changes to our UI and app functionalities.

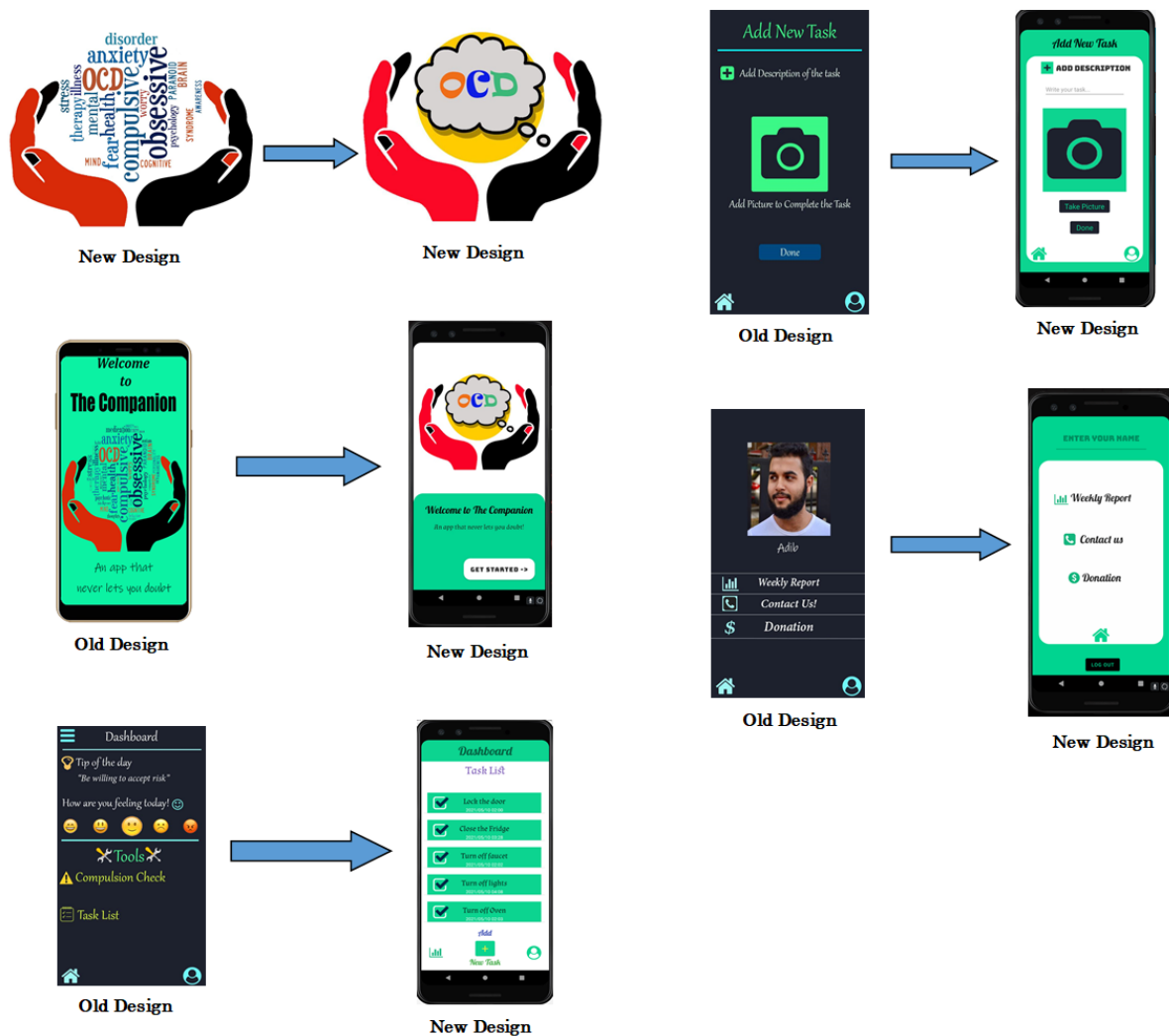


Figure 4: Old design VS New design

After implementing the new design, we sent out a survey and received a lot of positive feedback which indicates we were in the right direction.

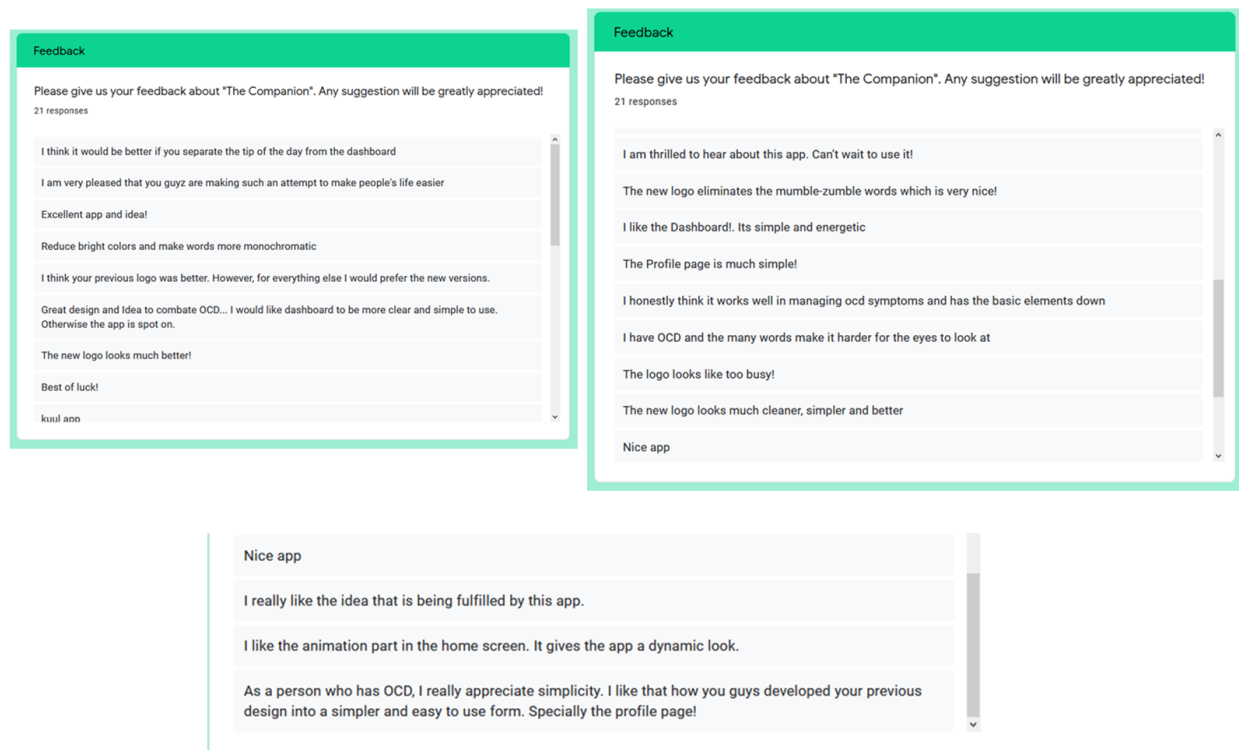


Figure 5: Feedback from the survey

Discussion of Potential Markets and Future Work

Market Size

Research has shown that almost 2.2 millions adults (2-3% of the US population) are suffering from OCD [6]. That means every 1 in 40 adults in the United States have the symptom of OCD. Moreover, In families that have OCD, there's a 25% chance that another immediate family member will develop symptoms [7].

GENERAL OCD FACTS AND FIGURES

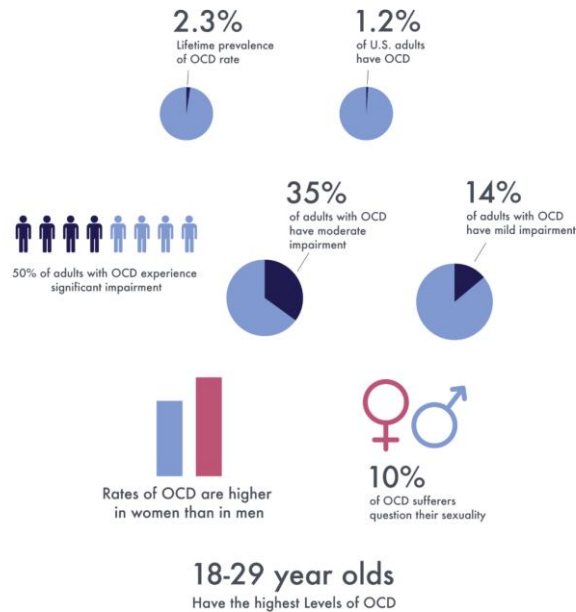


Figure 6: OCD market size [8]

Yearly Cost (Estimated)

We will launch the app in both the google play store and the app store. A one time fee is required to launch the app. For google play store, the fee is \$25 and for the app store, it is \$99. There will be a maintenance cost which is estimated to be \$500 per year. For future development, we estimated the cost to be \$500. We also need a server to store, send and receive data. The yearly cost of the server is estimated to be \$300. As a result, the total cost is \$1424 approximately.

Revenue

We will collect donations through our app. We will also accept state and federal Grants. We planned to launch a premium version (add free and with more features) of the app. There will be a yearly charge of \$10 for the premium version. For the base version, we will use advertisements as sponsorships.

Branding



Figure 7: Logo

A companion is someone who aids and who one travels with. We chose to name our app “The Companion” because the app aids people with OCD and gives them certainty and security in the things that they obsess over. In addition, people are usually on their phones and take their phones with them; this app will travel with OCD users wherever they go so that they don’t have to worry about tackling their challenges alone. For the color scheme we chose black, red, dark blue, orange, green, and a white/square background. The black represents enthusiasm and sophistication [9]. The red represents excitement, courage, and willingness to those who lack willpower. The dark blue evokes security, professionalism, and formality. The orange depicts playfulness, vitality, and friendliness [10]. The green represents prosperity. The white/square background evokes stability and balance in the human mind. The hands represent control, the cloud evokes many thoughts, and the full logo depicts control over OCD.

Video Link: <https://youtu.be/qETNUjgLllyo>

Contributions

Farshed worked on the UI for the dashboard and task list. He also worked on the functionality of writing a task, taking a picture, uploading a picture, compulsion check, and adding tasks to the task list. He was also in charge of adding tasks and compulsion counts to the Firebase database. In addition, he reached out to Mohammed Hassan for feedback and interviewed three people who have OCD on the app functionality and design. Finally, he acted as a person with OCD in the video and took video clips of himself for the video.

Rashidul designed the user interface for the ‘Login’ and ‘Sign up’ screen. He also implemented the backend logic for those screens. After that, he authenticated those pages with Firebase. He also implemented ‘forgot password’ in the Login screen. Moreover, he added animation in the homescreen, login screen and signup screen. Furthermore, he implemented the ‘contact us’ page which contains the team social media platforms like facebook and instagram. He also implemented the logout function. He created a GitHub repository to collaborate works with the team members. Finally, he implemented navigation between screens.

Raihan designed the User Interface of the “Dashboard”, “Add Task”, “Profile Page”. He worked on the “Weekly Compulsion Check Chart”. Also he worked on both frontend and backend for the “Profile Page” and implemented animations to the options such as “Weekly report”, “Contact us”, “Donation” for better visualization. He contributed heavily on making survey forms, presentation slides, designing logos and coming up with the slogan. He compiled and edited the videoclips to make the video presentable. Finally, he presented the demo of the app functionality on the video.

Acknowledgements

Over the past two semesters, we have learned so much about not only OCD but also on developing a mobile application. We have successfully completed the app with the help of our evaluators, interviewees, and survey respondents who helped us make the app the way it is. We would like to thank Professor Zhu for making the process of developing this application easy for us and helping us find a specific issue to tackle. We would like to thank Celina Cavaluzzi and Dr. Cecilia Faley for giving us valuable feedback which allowed us to make the app more positive to users.



“The work in this project is our own. Any outside sources have been properly cited. The project is supported by the CCNY CEN Course Innovation Grant.”

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