

Requirements Document

[App for Youth Patients in Dialectal Behavior Therapy (DBT) Groups]

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Introduction

Dialectal Behavior Therapy (DBT) is a cognitive-behavioral psychotherapy to treat people with borderline personality disorder. Borderline personality disorder consists of ongoing patterns of varying behavior and moods. However, therapists identify the difficulty of engaging youth patients in DBT groups as a barrier to treatment. Furthermore, youth patients' unwillingness to speak on the phone or communicate through email is a challenge for the therapists. Alternatives such as text messaging are too personal for use in the therapy context. In this project, we are aiming to create a solution to these problems by creating an app that would allow better communication and enable therapists to provide patients with a set of helpful resources. This app will push out messages/notifications to each DBT group member with DBT information, group starting dates or group cancellations, as well as reminders to practice skills. It will facilitate communication of information between therapists and patients as some youth patients do not check email often.

User Group

The users of the app will be therapists, patients and parents. Therapists are registered therapists at Hotel Dieu Hospital, running DBT therapy sessions. Patients are youth from ages 14-18, enrolled in a DBT group program and parents are the parents of the patients who are interested in monitoring their children's progress through the application. All these users need to be familiar with using a phone application and have some level of technical sophistication. They should be frequent smartphone users, and likely have reasonably high-end devices. They should be familiar with their platform's built-in calendar app. Predominantly, they will be users of either the iOS or Android platforms and will be familiar with operation of their specific platform of choice. They should also generally have reliable internet access at most times and places and should be familiar with the process of connecting to an internet connection. Staff members are likely less experienced than patients in terms of smartphones but are still likely familiar with necessary operations like installing and using apps such as Facebook and Messenger. A tutorial on this app can be provided to the staff members and patients if they need it.

Context of Operation

To be able to use the application, users are required to have smartphones, either iPhone 4S or later, an Android 4.3, for instance, Galaxy SII or later. Typically, both the patients and the therapists will carry their mobile phones with them all day, so users are free to use it anytime of the day for any period of time, both in their homes and outside, wherever a reliable network connection is available. Internet is required to fetch new data from the server, for example, to send and receive messages. In terms of specific network connections, users can use an open internet connection (i.e. restaurant connection) or a private connection, be it home or an office/work internet connection. In this case, therapist would be able to use the app using the private Wi-Fi connection of Hotel Dieu Hospital. Furthermore, since the application is running on mobile phones, mobile data connection is generally sufficient. The application is private as it is downloaded on the user's smartphone and requires a login password. Individual sessions using the app should not last more than a few minutes at most, and users are not likely to have their experience meaningfully impacted by the specifics of their surroundings.

Current Processes

Patients and therapists currently communicate through email and/or phone calls. When therapists want to remind DBT group members about homework or when they want to cancel an appointment, they email or call each group member. However, therapists find it difficult to initiate conversation as young people tend to not check their emails regularly and are difficult to reach by telephone. On top of this, some patients do not have an email account, which makes it more difficult to get in touch with them. Text messages are not an option as they are too personal and direct, and give the patients the impression that they are able to talk directly with their therapist at any hour.

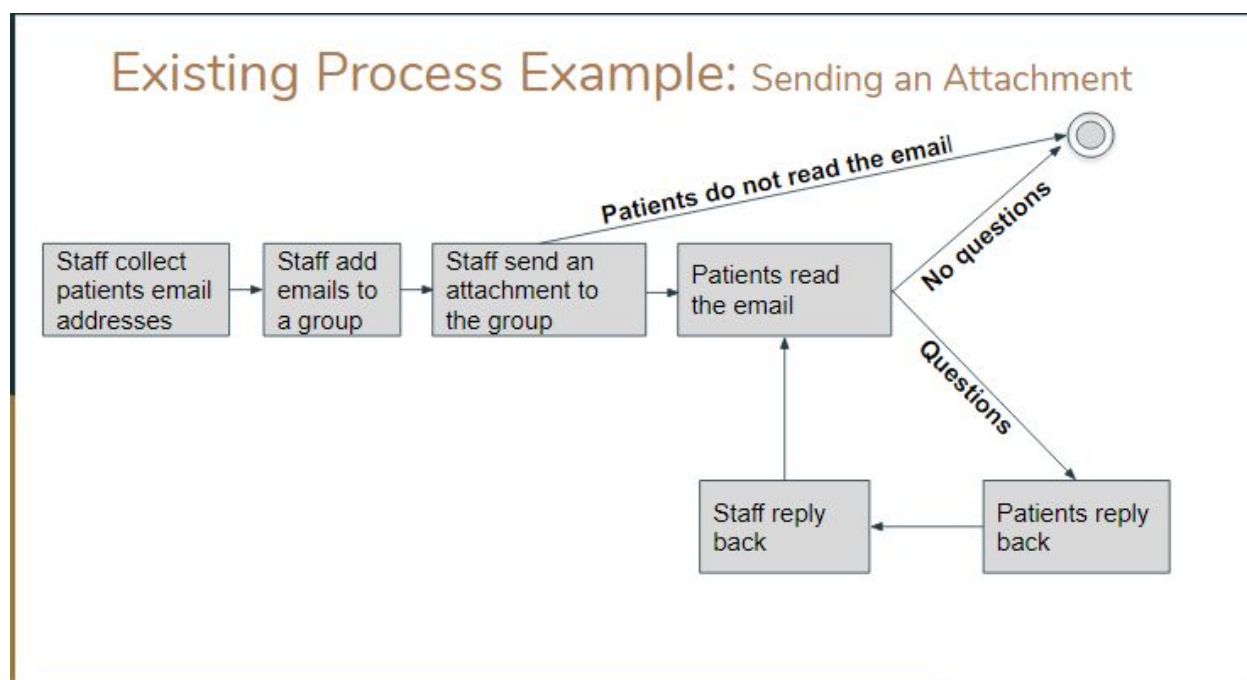


Figure 1: This is an example of a staff member sending an email containing an attachment to the patients. First, the staff collects patients' email addresses and adds them to a DBT group. Second, staff sends the email with the attachment to all members of the group; Patients either read this email or they ignore it.

Roles

There are 5 roles users can take while interacting with the app namely the coordinator, staff, patient, parent and hospital IT.

The coordinator is a specially designated staff member who, in addition to the normal duties of the staff role is also given additional user and group management privileges. The coordinator is in charge of managing the app's users and is responsible for creating accounts for the other user roles. Providing these privileges to a staff member allows the system to operate independently with minimal IT effort while still allowing the staff total control over user accounts.

Staff is a subset of coordinator role. Staff is likely going to be 2 or 3 registered therapists. They will be using the app to communicate and engage patients in the DBT groups, remind them the group starting and cancellation, collect homework from them and provide DBT resources to the patients. Staff will have privileges suitable for these tasks, including the ability to post resources, send messages to entire groups or to individuals, and set appointment and meeting dates. Staff, however, will only be checking the app during work hours, 8:30am to 4:30pm on Mondays to Fridays.

Patients will be using the app to manage and keep track of their DBT meetings and homework, manage and change appointments, and to access mental health resources provided by the therapists. Patients will have privileges suitable for these tasks, including the ability to access resources, send limited messages to the group and request meetings.

Parent is any user that will be using the app to keep track of what their children need to do for their therapy.

Hospital IT will not be using the mobile app itself but are instead responsible for setting up and maintaining the backend server application. They do not require accounts or privilege management as they do not use the system or interface directly with any user-facing part of it.

Functional Requirements

ID	Priority	Requirement	Description
R1	Critical	Groups	Therapy groups form the base organizational unit for patients. A group has a name, a list of patients who are members of the group, group meeting appointment times, and associated group-specific resources posted by staff.
R2	Critical	Storage of group and patient data	All app data is stored on messaging server so that it can be retrieved at will
R3	Critical	Separate patient, parent staff and coordinator roles	Roles of patient, parent, staff, and coordinator exist as separate user account types and have different interfaces and privileges available
R4	Critical	Coordinator can create new staff accounts	Coordinator can create new staff accounts with given email addresses and an automatically generated password.
R5	Critical	Coordinator can create new patient accounts	Coordinator can create new patient accounts with given email addresses and an automatically generated password.
R6	Optional	Coordinator can create new parent accounts	Coordinator can create new parent accounts with given email addresses and an automatically generated password.
R7	Critical	Coordinator can see all group activities	Coordinator is responsible for monitoring the application and managing all accounts. He/she has the right to oversee all group activities.

R8	Important	Coordinator can change his/her account password	Once the coordinator logs in to the application, he/she is able to change his/her automatically generated password to a memorable (secure) password.
R9	Important	All users can reset passwords	In the event users forget their password, they are able to reset the password using their email address stored in the system
R10	Critical	Patients can log in with existing account	Any registered patient that wants to access the application is able to log in to the application using their email address and password given by the staff/coordinator. Logging in triggers the app downloading any preexisting data for that user's group and setting calendar events.
R11	Important	Patients can change their account password	Once the registered patient logs in to the application, he/she is able to change their automatically generated password to a memorable (secure) password.
R12	Critical	Patients can join groups	Patients are able to join their group by scanning a group specific QR code from within the application
R13	Critical	Patients can not access other groups	Patients are restricted in joining other groups; each patient is only able to browse their specific group contents.
R14	Critical	Patients can not access other patients	The application is configured in a way that none of the patients are able to message or see contact information of other patients.
R15	Critical	Patients can send messages	Messages by patients are sent to all group-associated staff, and are limited in content.
R16	Critical	Patients can send attachments	Patients are able to send attachments such as images, videos and documents to their group.
R17	Important	All patients can access general resources	Although patients have restricted access to specific groups, all patients are able to retrieve resources (i.e breathing exercises, mental health crisis line) from the general content area.

R18	Important	Patients can access group resources	Patients can access group specific resources such as image, video and document files posted by staff members
R19	Critical	Patients can request to cancel appointments	Patients have the ability to cancel appointments by pressing on the “cancel appointment” button which sends a request to the staff to cancel the meeting.
R20	Critical	Patients can request appointments	Patients have the ability to request an appointment by pressing on the “request appointment” button which sends a request to the staff to book a meeting.
R21	Critical	Staff can log in with existing account	Staff can log in with their email address and password provided by the coordinator. Logging in will trigger the app downloading any preexisting data for that user’s group and setting calendar events.
R22	Important	Staff can change their account password	Once logged in, any staff can change their generated account’s password to a memorable password.
R23	Critical	Staff can create new accounts for patients	Any staff can create new patient accounts with given patient email addresses and an automatically generated password.
R24	Optional	Staff can create new accounts for parents	Any staff can create new parent accounts with given email addresses and an automatically generated password.
R25	Critical	Staff can add patients to group	Any staff can add patients to an existing group and let the patient able to browse the group contents.
R26	Optional	Staff can add parents to group	Any staff can add parents to the group their child is in and let the parent able to browse the group contents.
R27	Critical	Staff can generate QR code for joining group	QR code acts as access key for joining specific groups. Staff members can generate a QR code for any group.
R28	Critical	Staff can access all groups	Staff members are able to monitor all groups and communicate with all members in groups.

R29	Critical	Staff can delete patients in group	Staff is able to delete patients from the group. Delete must be restricted to staff interface.
R30	Optional	Staff can delete parents in group	Staff is able to delete parents from the group. Delete must be restricted to staff interface.
R31	Critical	Staff can create new groups	Staff is able to create groups using staff interface. Group creation requires entry of a group name.
R32	Critical	Staff can delete groups	Staff is able to delete old groups from the server. Deleting should require confirmation.
R33	Critical	Staff can send messages	Staff is able to send messages to both groups and individual patients. For example, staff can send a message regarding available time slots for appointments
R34	Critical	Staff can send attachments	Staff is able to send files to both groups and a specific patient. Files that staff members can send include common types of messaging app files such as images and documents.
R35	Important	Staff can add resources	Staff is able to add resources to the general resources and group resources section; adding is restricted to staff interface. Resources can include images, text and video files.
R36	Important	Staff can delete resources	Staff is able to delete unwanted resources from the general resources and group resources section; Deleting is restricted to staff interface.
R37	Critical	Staff can add meetings	Staff is able to add meetings with patients by pressing on the “add a meeting” button which will send a notification to patients. For example, once a patient request an appointment, the staff should be able to add that meeting by way of confirming that request
R38	Critical	Staff can cancel meetings	Staff is able to cancel meetings by pressing on the “cancel meeting” button which will send a notification to patients.
R39	Optional	Parents can log in with	Any registered parent that wants to access the

		existing account	application is able to log in to the system using their email address and password given by the staff/coordinator. Logging in triggers the app downloading any preexisting data for that user's group.
R40	Optional	Parents can join groups	Parents are able to join their group by scanning a group specific QR code from within the app.
R41	Optional	Parents can change their password	Once the registered parents log in to the application, they are able to change their automatically generated password to a memorable (secure) password.
R42	Optional	Parents can receive messages	Once a parent joins a group, they are able to receive the same group messages as the patients.
R43	Optional	Parents can receive attachments	Once a parent joins a group, they are able to receive any group attachments

Non-Functional Requirements

- Security

In terms of security, personal information such as email addresses used to login must be protected and the system must have implementations such as encryptions or two factor authentications to ensure that data is protected from unauthorized access. Similarly, backend must not be vulnerable to SQL injection so that malicious users can't edit data unauthorized. Privileges of each user class must be enforced and not easily circumvented. System must also follow all relevant medical confidentiality laws and policies. Finally, name and icon must be discreet to ensure that it doesn't give a mental health vibe

- Usability

To make it easy for people to understand, the tutorial manual must be well-documented. The interface must be very user friendly and must not hinder the user's satisfaction of using the application. It also must be simple to use and sufficiently convenient for the intended users, including new patients, new staff and new parents.

- Performance

This app must run responsively on both iOS 9.0 or later (iPhone 4S and up) and Android 4.3 or later (Galaxy SII and up). To achieve an acceptable level of performance, it will be fast and the loading time for the application must be less than 2 seconds. It will also be small enough, so the space usage on the first download is less than 100MB.

- Maintainability

We want this app to be easily maintainable, and as such our code must be well documented and easy to adapt to new requirements. Similarly, there must be a wide suite of automated tests, allowing us to extend the application easily while managing bugs. The ability for staff to upload new resources to the resources page gives them extra flexibility in extending app content without requiring any software changes.

- Accessibility

In terms of accessibility, users must have access to a network connection to fetch new data from the server. Users must be able to download the application for free on iOS in the App store and on Android in the Google Play store. Additionally, an intro tour or tutorial must be included in the app to help navigate the application

Technical Requirements

This application runs on iOS 9.0 or later and Android 4.3 or later which requires us to have Android development and iOS development, Xcode, to be installed on PC and MacBook. Although registration is free for both Android (Play Store) and Apple (Apple Store), iOS and Android development kit requires a purchased license. These licences - Android licence priced at \$25 (one time payment); Apple priced at \$100 per year - are required to upload the application to the desired store. In order to test the application, an iPhone and Android phone is needed.

Glossary

Term	Meaning
DBT	Dialectal Behavior Therapy
User	Someone who interact with the mobile application
Patient	Youth aged 14-18, diagnosed with borderline personality disorder and registered in DBT group sessions.
Staff	Therapists in charge of DBT sessions
Resources	Generally available (non-message attachment) resources, both group-specific and general. Can be files, exercises, etc
App groups	Therapy groups form the base organizational unit for patients. A group has a name, a list of patients who are members of the group, group meeting appointment times, and associated group-specific resources posted by staff.
SQL injection	SQL injection occurs when you ask a user for input, like their user ID, and instead of an ID, the user gives you an SQL statement that you will unknowingly run on your database

Contributions

Name	Contribution
Gaveshini Sriyananda	Introduction, User Roles, Functional Requirements and Non-Functional Requirements
Yue Cai	Context of Operation, Functional Requirements and Non-Functional Requirements
Selena Sun	User group, Functional Requirements, Non-Functional requirements and technical requirements
Alex Huctwith	Current process, User roles, Functional Requirements, Non-Functional Requirements