Mind Matters

CSCI 4620U: Project Part 4b

Evaluation

Part 1: Usability Study Plan (70%)

Imagine you will evaluate your prototype with individuals from your primary stakeholder group. Select the necessary roles for the study, as described in class (you may not need a computer role if you are not using a Wizard-of-Oz technique. However, someone should be familiar with the interactive prototype and available to help with technical problems). Write a usability study plan, which outlines your evaluation protocol (the steps you will follow to conduct the evaluation). Describe the stakeholders you would ideally bring in to participate, then outline the details of how the evaluation would be run for each participant. A typical plan has the following steps:

1. **Welcome and brief the participants, obtain consent.**

We will start by greeting our participants and giving them a brief introduction about our study. We will let them know that if they don't feel comfortable answering any of the questions or do any of the tasks, they are free to skip any of them. We will also verbally ask them if they would like to participate in our study to obtain their consent and will provide them with a consent form which they will have to sign prior to our study.

2. **Evaluate the usefulness in a semi-structured interview.**

We will start by telling our participants the purpose of our app and let them know that we made this app to help those who have been suffering from mental health problems such as anxiety, loneliness and depression caused by the pandemic. We will first ask them a set of questions such as what functionalities they would like to use in an app that is made to help those dealing with the mental health problems we listed. We will ask them these questions before letting them know about the functionalities in our app so that their answers are not biased. We are then going to show all the participants our app and briefly explain all of the functionalities. We will let them go through the app and analyze the different functionalities. After allowing them to go through the app we will ask them another set of questions to see if their thoughts are the same or if they changed their mind.

Question asked before going through our app:
1. Do you think a mental health app can actually help treat anxiety, loneliness and depression?
2. Do you use any mental health apps ? If yes, then explain how these apps have helped your mental health ?
3. Would you consider mental health applications to be effective ?
4. Would you be open to going to online therapies ? If yes, then do you think it will be just as effective as in person therapies ?
5. What functionalities would you like to see in an app which is made for mental health purposes ?

Questions asked after going through our app:
1. Would you be interested in using this app in your daily life ? If yes, do you think it will be effective ?
1. What was your favorite part of the app ?

2. What functionality do you think you would be using the most ?
3. Are there any improvements you would like us to make for the app to allow you to have a better experience ?

3. **Evaluate usability through task performance.**

We're going to ask the participants to attempt to text a friend using the Mind Matters application. We would tell the participant to open the app and then we'll have them log in to the application using the supplied login details. Next, we'll ask them to navigate to the friends list page. Finally, we'll ask them to choose a friend to message using texting.Throughout this process we'll ask the participant to explain aloud what actions they are taking in order to complete our instructions.

We would most likely expect the participants to observe the style of our application, notably the colour and button design. We would also expect the participants to observe the low amount of steps needed to achieve this task.

Some errors or issues the participants might encounter would be login connectivity not working properly, possibly due to a server or network issue. We may also see some participants not understand what the icons on the bottom navbar correspond to and thus would not be able to successfully navigate to the friends page. In this instance we would point out the bottom navbar and ask them to try pressing some of the icons.

The next task we would like the participants to complete would be to create a new voice recording post on the community page. First, we would ask the participants to open and log in to the Mind Matters application, if they are not already logged in from the previous task. Next, we would ask the participants to navigate to the community page of the app and select the create new post button. Finally, we would like the participants to create a voice recording and post their recording to the community page. To ensure it is posted correctly we would also want the participants to view and interact with their newly created post either by liking or listening to it. Throughout this process we would ask the participants to explain aloud what steps they were doing to achieve this task.

We would hope that the participant would observe the ease of use of creating a new post on the community page. We would also want the participants to observe other posts that would be on the community page and be able to know who made the post, what the post is about, and what type of post it is (voice recording, text post, or video post).

Some errors the participants might encounter would be that the post wouldn't post correctly due to a network error or server error. The participants may not be able to view other peoples posts due to none being available. To fix this problem we would populate the community page with test posts. It is also possible that the participants would be unable to locate the community page due to not understanding the icon on the bottom navigation bar. To fix this issue we would land

the participants on the community page immediately after logging in to the application so there is no navigation needed.

4. **Examine the participants' conceptual model.**

We would ask the participants if their conceptual model had a similar style in terms of colours and the look of the buttons. We would also ask which colour pallet they prefer for the application between their conceptual model and our design model. We would also want to know how the participants' conceptual model flow between pages differs from our design model. What types of pages did they expect the application to have and how they expected the messaging portion of the application to work.

5. **Gather suggestions for improvement.**

We will ask for ratings on a list of interface points.

1. Rate how you liked the colour scheme
2. Rate if buttons were where you expected them to be
3. Rate how fluid the interface was (how easily you could move between pages)
4. Rate how easy it was to find and text a friend
5. Rate the bottom navigation bar
6. Rate the login process
7. Rate how easy it was to create a new post
8. Rate how easy it is to interact with other users posts

Scale for ratings:
1 - dislike, hard, bad
2 - somewhat dislike, hard, bad
3 - neutral
4 - somewhat like, easy, good
5 - like, easy, good

Once all ratings are compiled, we can focus on the points that the reviewer rated between 1 and 4 since a rating of 5 would mean there are no outstanding improvements from the reviewer's point of view.

We directly ask the reviewer about the points that they rated 1 to 4: why they rated it as a 1 to 4 and what would they like to see improved about that particular point? For example, if the reviewer rated "1. Rate how you liked the colour scheme" as a 3, asking why they rated it as a 3 will help us understand what they didn't like. Then asking what they would like instead/how we could improve it will give us alternatives for that aspect of the interface (ex. different colours, option to change the colour scheme, dark mode, etc.).

6. **Evaluate usefulness with Function Descriptions.**

We will go through all our functionalities listed below with the reviewer.

Login page: On this page of our app is where you add in your user information to log in and have a personalized experience.

Community page: On this page of our app, you will be able to make a post, like a post or add friends. You will be able to filter out people to add according to your interests, all you have to do is type in a few keywords and our app will filter out recommendations for you.

Friends/Therapist page: On this page, you will have the option to chat with a friend or chat with a therapist. You will be able to video chat or just regular voice calls. A therapist will be available 24/7 for you to talk.

Chat page: You will also be able to send pictures and voice messages as well as play games with your friends.

Mood page: On this page, you will be able to choose how you are currently feeling. There will be a couple of options you can choose from. Depending on the option you choose you will be directed to a new page. For example, if you choose "restless" you will be directed to a new page where you can choose from either "read a book" or "listen to music". Or if you choose the option "anxious" you will be able to choose from either "play a game" or "meditate".

Once we have explained all the functionalities and what they are used for, we ask the reviewer to tell us how important they found each functionality. Providing us with an importance rating will work well here to determine just how useful/important that function is. Next, we ask if there are any discrepancies between what was just explained and what they experienced during the usability test. This will allow us to get a gauge for what we intended vs what was experienced in practice. Finally, we ask if there are any functionalities that we may have forgotten that would improve the usability of the app.

Part 2: Design Review (30%)

The usability heuristics by Jakob Nielsen is defined to provide an optimal solution, like a "rule of thumb" which will be explained more below. Here are the 10 usability heuristics for user interface design and how they are implemented in the app:

1. Visibility of system status
2. Match between system and the real world
3. User control and freedom
4. Consistency and Standards
5. Error prevention
6. Recognition rather than recall

7. Flexibility and efficiency of use
8. Aesthetic and minimalist design
9. Help users recognize, diagnose, and recover from errors
10. Help and documentation

The visibility of system status represents the design which would keep users informed about what is happening in the app, given appropriate feedback within a reasonable amount of time as defined by Jakob Nielsen . This would mean the users would know what the current system status is and the outcome of interactions which are done earlier. This would inform the users about the next steps and help create trust in the application. Using the visibility of system status this is implemented in the design of our app for instance when the wait time for the therapist is counting down in the chat with friends page, the users would be able to see the system status of when they would have access to a therapist based on the system timer. Given this usability it would inform the user as time passes by immediately providing an updated wait time to chat with a therapist while


they can either wait on the chat page or switch to different pages in the app. Another use of the visibility of system status would be in the community page, when the user scrolls towards the bottom of the page and cannot scroll further down the system will notify the user that they are all caught up with the posts. Having this system status be visible, it would help the user be informed in relation to why they cannot scroll further down the page and to now either post or switch over to other pages.
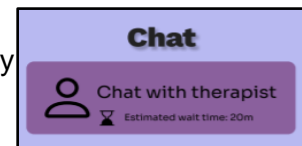
The match between the system and the real world represents the design that should speak the users' language as defined by Jakob Nielsen . In terms of the app it would depend on the specific users, in this case it would be targeted towards users who face mental health issues. Terms, concepts, icons and the images were made more clear in the app, so that the targeted users can have a better understanding of the representations, this was done by using


"natural mapping'' which focuses on real world examples corresponding to the desired outcome. For example this mind icon, as seen in this image it won't be easy for all users to understand want this icon would mean, since this is targeted towards users who understand mental health; those users would be able to understand that this icon is correlated to users who face mental health issues as the brain part of the head figure is highlighted which indicated that this icon would redirect users to a page where mental health is focused on; which would be the mood page (allows users to select the moods which they currently face like anxiety or restlessness). Some system and real world representation which
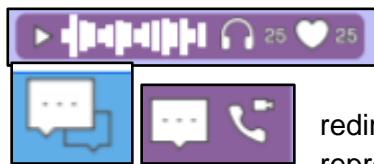
most users who use the app can understand the icons in these images such as the play button to play the voice recording , headphones to listen which gets automatically updated once play is clicked, heart to like the post, text boxes with dots in it which redirects to a chat page and a phone button/video call button representing video or voice calls. Observing these examples we can see that the match between the system and the real world has been used in the mind matters app.

The user control and freedom represents the user performing action by mistake, which indicates that an emergency exit is needed to leave the unwanted action through a shortcut as defined by Jakob Nielsen .The importance of user control and freedom for users is necessary as it would give users a sense of freedom to perform an action knowing there is a way out of that action at any time. One example I can mention is in the interaction design users are given a
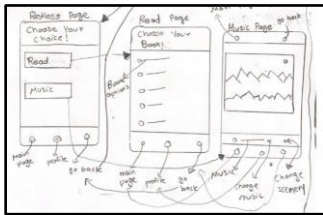
chance to redirect their action to the previous one if they chose to, in case they chose the wrong tab or button. In the image provided there are also buttons to go back to the profile page or even the main page, which would give the user an emergency exit to their default profile page or main page through a shortcut instead of pressing the "go back" button on every page.

The consistency and standards represents the users not having to wonder whether different words, situations or actions mean the same thing as defined by Jakob Nielsen. As seen in the icons below these icons are used in many other platforms such as instagram,
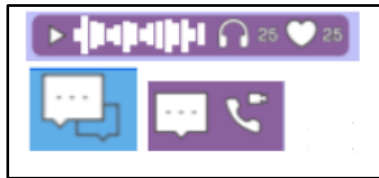
snapchat and facebook to call, chat, send images, play games like in snapchat or even to record a voice. Throughout the demo app it can be seen that many of the pages like the community page where they can post, the chat page to interact with friends or even the sending messages page, were designed in consistency to meet user expectations so that they will not need to learn a new way of navigating and majority of the icons.

The error prevention represents the importance of good error messages and their importance in preventing problems from occurring. It would either eliminate error-prone conditions, or check for them before users commit to the action as defined by Jakob Nielsen. In specific there are slips and mistakes which are two types of errors, slips are made unconsciously due to distraction and mistakes are caused consciously based on design. To incorporate the error prevention of slips in the app
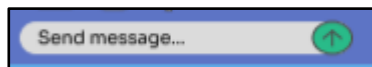

one example is the like button if a user likes a post by accident due to distraction they will have the option to unlike the post. To incorporate error prevention of mistakes we used colour coordination, to ensure that unconscious miss clicks do not easily happen. For instance this navigation bar all has a different

contrast of blue and white so users will know which button to click on without getting them confused, another example would be the send button, in order to not make a mistake based on design the send button is highlighted green indicating that if pressed it will send a message.
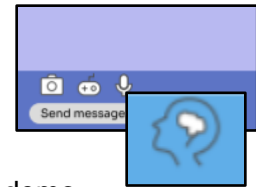
The recognition rather than recall represents the minimization of the memory which users carry by making options, actions and elements visible. Given this the users would not need to remember all the information required such as field labels or menu items, so they should be visible when needed as defined by Jakob Nielsen. In the app it can be showcased in this scenario where a user can post or even send a message, it would be generally obvious that

a user can post or send a message on the pages corresponding to these pictures (chat message page or community page), in order to help the users, the app has pretext on it so that users would not have to recall what these text boxes generally do.


The flexibility and efficiency of use would represent the shortcuts and speed up interactions for expert users such that the design can cater to new and old users allowing users to tailor actions often as defined by Jakob Nielsen. In the app these methods are used as there are many shortcuts as shown in the demo design. If one would want to go to the mood page from chatting or checking their friends status to playing a game or meditating they can do so by clicking on the head icon from either of those pages.

The aesthetic and minimalist design represents the interfaces which do not contain information   irrelevant or rarely needed, every information competes with the relevant units of information and decreases the visibility as defined by Jakob Nielsen. In short it's about making sure the content and the visual design are focused on. As seen in the demo (image shown is the page with the most information) the themes chosen are kept to a minimum of a light purple background, dark purple to emphasize the action button and a light blue to emphasize the navigation button. As seen, the design approach taken is kept to two shades of purple and blue, yet it ensures that the visual elements of the interface would support the user's primary goal. This theme emphasizes that the content and the visual design is focused on the esstentials.
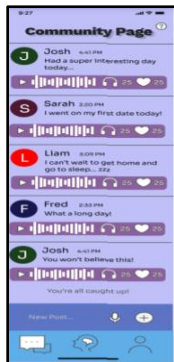
The help users recognize, diagnose, and recover from errors represents messages which should be expressed in plain language indicating the problem and suggesting a solution as defined by Jakob Nielsen. In the app the indication to having an error is on the main page when a user tries to scroll down more than necessary, a message would appear mentioning that

the user is all caught up this message would provide the error that the page is unable to scroll further to the user is all caught up, this provides a solution as well indicating to the user that this is the most that the user can scroll to.
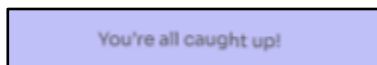
The help and documentation represents that if necessary the system would need to provide documentation to help the users understand how their task would be completed as defined by Jakob Nielsen. As seen in the image the app implemented it by having a question mark symbol on the main page which would indicate that there is a help page for the user to click on; once it is clicked the user will be redirected to the help documentation page where the user would be able to receive help in a documented manner.

Reflecting back on the heuristic of the various design principles discussed through the term, we can observe that if we were given more time with the app, we would be able to improve the visibility of system status by communicating clearly to users what the system's state is while presenting feedback to the user as quickly as possible. Our visibility of system status only had a few options like if the user is caught up to all the posts, or the wait time for the therapist. This can be improved by adding in notifications of when the therapist is available to chat by using the method of a system notification which would provide the user a notification in the form of "Your therapist is available to chat". This would be in the form of a button so that when clicked on it would redirect the user to the chat page, without this upgrade there would be a flaw in the app in the sense of the system visibility being limited which would not allow users to freely access the therapist at any time.

Analyzing the user control and freedom of our app, the flaws seen in our design would not allow the users to undo or unsend a post or message. Given more time this can be improved by making our app support undo and redo when typing a post, having an unsend button after the user posts or sending a message to the therapist. These upgrades would give the user more freedom in posting or sending messages to their therapist. These flaws would apply to the error prevention as well, in order to prevent high cost errors we can provide helpful constraints and good defaults and prevent mistakes by removing memory burdens. The improvement which can be done for a slip would be before calling someone having a timer as to when the call would connect allowing the user to have time to cancel the call either to a friend or to a therapist. Another improvement for a mistake would be to remove memory burdens by supporting undoing in messages or posts and warning your users when they are going to call a friend or a therapist.

Analyzing the recognition rather than recall of the app flaw in this category would be the leniency to offer help in context, instead of giving users a long tutorial to memorize. Given more time this can be improved by implementing a feature of when a user hovers on an icon there can be a small word defining that icon for instance if it was the mood icon it can have the word "mood" when hovering on the head icon. To help users better recognize, diagnose, and recover from errors than the features which we currently use in the app we can improve the post limit section which could be made by adding in a word limit to the post when writing. For instance if a user surpasses a limit of 1000 words the system would inform the user that the word limits have been reached. This would get rid of the flaw when creating post errors in the terms of the word limit. The last major flaw which I found in our app would be the help and documentation, the help page does not have a search feature which ensures that the help documentation is easy to search or even a list with concrete steps to be carried out. If we implement a search button and recreate the help page by having concrete steps with different tabs to access the desired word, it would make user use much more efficient.

Given the heuristic evaluation and reflections on my experience of our prototype there were implementations which were done appropriately in our mind matters app, yet there were areas of improvement in some areas of the heuristic evaluation which would need to be done if more time was provided. Some desirable additions of new goals would be to make our app

more user friendly to people who face mental health issues allowing users to easily access their desired features in our app and to make chatting with therapists for their mental health issues more convenient and realistic. Our app would also like to focus on narrowing down our primary stakeholder/persona by having stakeholders who are more affected by anxiety or are sleep deprived. Some changes to our system / app based on how a user would use it would be changed in terms of the user having accessiblity to access an appropriate help page when confused and get notifications of errors or when a therapist is available to talk. This would follow the conceptual model to be modified, for instance the primary stakeholders would get an appropriate help page to go to in case they would not understand some features, this change would occur in the design principles section. Another modification would occur when a user receives notification of the therapist availability they would be able to click on the button redirecting them to the chat page. Some additions which can be done to the proposed functionality would be by adding in an appropriate help page and making changes to the icon, allowing notifications of errors and available therapists. Desirable changes to the proposed user interface would be making the help button stand out more, adding in error dialogs to the posting section incase of exceeding word limit and changing the help page to make it more user friendly. We have learned that given these desirable additions to our app it relates back to the heuristic evaluations and reflections supporting our reasoning for the desirable additions in each category. This would support the theory of usability heuristics mentioned by Jakob Nielsen ten general principles for user interface design.

Using the prototype of the app and the data collected from previous projects it can be concluded that the app would effectively help people who face mental health issues, though if the improvements mentioned were made to the app users would have an easier time navigating through our app and less inaccuracy would be evaluated. There are 3 reasoning based on theory from the course (CSCI 4620U) : deductive, inductive and abductive. In this report inductive reasoning was used as it is used daily to build our understanding of the world by gathering data in the method of observation. This method was used to build this report since it started off with a goal of what our app's purpose is, then we gathered data to support our functionality based on semi-structured interviews and questionnaires. Then using this data we were able to get a better understanding of the needs to build our app, to refine the app we used heuristic evaluations to further improve the usability which would provide us with a generalization of what would help users who face mental health issues through mind matters application.