Project Part 1 – Proposal & Usability Test Report

CMPT 363 @ Simon Fraser University

Fall 2023

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Part 1: Proposal (0.5-1 page)

We will be improving the current state-of-the-art mental well-being applications for this project. There are already a number of highly-rated applications with varying functionality in this space. We will be narrowing our focus to healthier sleep applications available on the iOS platform. After research, a few notable applications catering to our specifications include Sleep Cycle, BetterSleep, SleepWatch, and Calm.

In the current application domain, the main issues consist of an overwhelming layout and a lack of beginner-friendly tooltips which lead to steep learning curves. This does not promote an initial enjoyable experience, decreasing user return.

We want to get a better scope of these issues and their severity through usability testing and further research on the currently available applications.

We will follow up with a plan to apply the conclusions from our results to the next steps in the process of this project including the creation of User Requirements and on-hand designing.

In the end, we hope to have mitigated any known issues in our own User Interface Prototype to satisfy the potential users.

Part 2: Usability Test

Overview

For this usability test, we will be using the mobile app ‘Calm’ on iOS. Calm is a library of audios which aids the user in meditation and sleep. To conduct this experiment, we will be using a combination of qualitative and quantitative data sets, particularly questionnaires and timing tests respectively, which will allow us to perceive a deeper understanding of the user’s experience through both modules. Results from this test will give us an insight into the components needed to boost user performance and satisfaction for our implementation.

Executive Summary

Our test application, 'Calm,' is a feature-rich platform with a wide array of functionalities designed to cater to the diverse needs of its users. For the upcoming usability test, we have chosen to focus on several key components that play a pivotal role in enhancing the overall user experience. These areas include the 'Sleep' directory, the 'History' feature, the 'Discover' queries, and the user 'Mindful Tools' section. Our rationale for selecting these specific features lies in their fundamental importance within the application's ecosystem. Each of these components operates in a distinct and significant manner, serving unique purposes in the user interface. The 'Sleep' directory, for instance, serves as a central hub for users seeking relaxation and sleep-related content. The 'History' feature, on the other hand, establishes user control and freedom to access previous audios. 'Discover' queries open up a world of exploration, helping users find new and engaging content to enhance their well-being. Lastly, the ‘Mindful Tools’ is a unique feature offered by Calm with a completely different interface than the audios. By focusing our usability test on these critical areas, we aim to gain a comprehensive understanding of how users interact with the application, identify any pain points or areas of improvement, and ultimately enhance the user experience. Through this strategic approach, we can delve into the intricacies of each feature, allowing us to make informed decisions that will contribute to a more user-friendly and engaging application overall.

Through the usability test of these features, we would like to determine the following:

- Ease of navigation (Quant.)
  - Test if the user can quickly and seamlessly navigate through a set of features.
- Feature error rates (Quant.)
  - Test the number of errors encountered per an instance of using a feature
- Error handling (Qual.)
  - Test how the application handles mis inputs and incorrect queries
- User preferences (Qual.)
  - Determine any features that may be missing or could be added to improve the feature.

Methodology

Participants:

Our usability test is carefully structured to involve a total of 4 participants, a selection strategy based on varying degrees of technological experience. We are committed to evaluating the performance of our application with users who exhibit different levels of familiarity with technology. Our strategy encompasses a range of levels, starting with individuals who are "incredibly comfortable" with mobile applications, and extending to those with "little to no experience." Given that our team comprises 5 members, we also have the flexibility to enlist a family member or friend as an additional participant. This approach allows us to conduct individual usability tests and collect data from diverse sources. We will reach out to potential participants, inviting them to partake in our usability test and gauging their level of experience and comfort with mobile applications.

For the usability test, all participants will be presented with a consistent scenario. They will be asked to assume the role of someone who urgently needs to set up the application to facilitate an early night's sleep. This scenario is relatable to real-world situations and compels users to interact with the features swiftly. Importantly, this controlled scenario will be applied uniformly to all participants to maintain consistency. Following the user interface testing, we will provide a written questionnaire for participants to complete, affording them an opportunity to share additional insights and feedback.

Procedure:

All participants will be equipped with an iPhone 11/12, featuring the latest version of the 'Calm' application. An assigned facilitator will be present in the room to monitor the session, ensuring a seamless testing experience for our participants. To minimise potential stress for the user, we will ensure that they have ample space to perform their tasks comfortably. Participants will be requested to mirror their mobile screens onto an extended monitor to enable our facilitators to view their interactions comprehensively. In order to ensure that participants are fully informed about the testing process, they will be asked to sign a consent form before taking part in the test

Once the testing environment is initialised and the participants are prepared, the usability testing session will commence. The facilitator will introduce the designated scenario to the participant, providing them with a set of clear instructions that they are expected to follow. In an effort to gain a deeper understanding of the user's thought process and decision-making, participants will be encouraged to narrate their choices while they explore the application. This narration will allow us to delve into their decision-making processes and gather insights into their thought patterns. Additionally, we will provide participants with the flexibility to discontinue using a feature if they encounter difficulties, with these instances being indicated by a 'FAIL' marker. Participants will also have the opportunity to take a break if needed after a set of instructions.

Following the completion of the second half of the instructions, all quantitative data collected will be meticulously compiled. The facilitator will then engage in a face-to-face discussion with the user to enquire about their experiences and impressions of the application. General questions such as "How do you feel?" and "Did you enjoy the app?" will be posed to gauge their overall impressions and emotions during the usability test.

After this discussion, participants will be presented with a questionnaire containing more specific queries about their experience. These questions may delve into aspects like "What part did you find the most difficult?" and "How would you rate the UI on a scale of 1-10?" The responses to these questions

will provide valuable insights into the user's perspective, allowing us to make data-driven decisions to enhance the application.

Upon completing the questionnaire, participants will receive candy as compensation, marking the conclusion of their participation in the trial. This comprehensive procedure is structured to gather thorough and insightful data on the usability of our application. It provides us with the opportunity to collect feedback and insights from participants with varying levels of tech expertise, ensuring that our user interface aligns with the diverse needs and experiences of our user base.

Usability Tasks

As Calm is equipped with a wide array of features, we will only be testing 4 features, the ‘Sleep’ directory, the ‘History’ feature, the ‘Discover’ search bar, and the ‘Mindful Tools’ feature. To test the usability and ease of access to these features, we will be conducting 4 tasks to test each feature at least once. Before conducting each task, the participant will have a notion that they are a user who is using this app to sleep, thus must use it efficiently so that they don’t compromise their sleep time. Each prompt will be incredibly open-ended, as it will test the intuitive design of the interface rather than having the user follow a set of instructions. For consistency, every participant will conduct the same tasks in the same order.

Task 1:

Suppose you want to fall asleep to a famous person speaking to you, in a directory, find a celebrity of your choice and play their audio. Select a couple of celebrity audios and play them one after the other.

- This task tests their ability to navigate to a desired directory

Task 2:

After selecting a set of audios, suppose you forgot the first audio you listened to, how would you go about finding that.

- This task tests if the application has an intuitive history feature

Task 3:

Instead of wanting to listen to a specific person, you want to listen to something ‘inspiring’, how would you query this?

- This task tests the usability of the query feature

Task 4:

Suppose you change your mind and want to do breathing exercises; how would you do that?

- This task tests the usability of the tools/’Breathing Excersise’ feature

For the participant to interact with the application, a test account with premium features will be provided. During the testing session, the facilitators will be monitoring the participants' actions via an external screen in which the content is shared. To calculate navigation times, a stopwatch will be required to conduct that task. For convenience and review, we will be recording the user’s face and audio (only with the participant’s consent) to visualize reactions to each task

Usability Metrics

To gather insight on our tests, we will be evaluating 4 different metrics. For a greater depth in our analysis, 2 will be quantitative and 2 will be qualitative. Consider each metric and the method of extraction:

Metric 1: Ease of navigation (Quantitative)

This metric will measure how efficiently the participant can navigate from one feature to another. This metric can be evaluated in many ways, however, we will use a stopwatch to gather the time taken to navigate to and complete a certain task.

Metric 2: Error Rates (Quantitative)

This metric will measure how many errors/misinputs a user encounters during a task. To calculate this metric, we will find the difference between the number of clicks the user needed to access a feature and the optimal number of clicks needed to access the feature.

Metric 3: Error Handling(Qualitative)

This metric will determine how the application responds to errors and if any measures are taken to fix errors. This metric is qualitative and will be determined through post-task interviews and the final questionnaire, where we inquire on the participants' opinions on how the application notified errors.

Metric 4: User Preferences(Qualitative)

This metric will determine the user's preferences to make the application better. This will be done through the questionnaire at the end, where we ask what the participant liked and disliked about the particular components of the application.

Key Observations

Our participants, labelled 1 to 4 for confidentiality, varied in their understanding of mobile application interfaces. Participant 1, with extensive knowledge, navigated the interface adeptly, having rated their UI understanding 5/5 in the prescreening. Participant 2, possessing decent knowledge, demonstrated moderate familiarity with a UI understanding rating of 3.8. Participant 3, with an average grasp, required some time to adapt, having rated their UI understanding as 2.7. Participant 4, with limited knowledge, needed substantial assistance, declaring a UI understanding of 2.

Quantitative:

Table 1: Times to navigate from one usability task to another (in seconds)

Participant	Task 1	Task 1 to Task 2	Task 2 to Task 3	Task 3 to Task 4
1	3.7s	18.2s	4.1s	34.0s
2	5.2s	8.2s	6.9s	66.4s
3	4.3s	12.s	14.6s	132.4s (FAIL)
4	14.8s	24.1s	45.7s	76s (FAIL)
Average	7.0s	15.6s	17.8s	77.2

Table 2: Number of clicks to complete a usability task

Participant	Task 1 (par = 3)	Task 2 (par = 2)	Task 3 (par = 2)	Task 4 (par = 2)
1	3 (diff = 0)	4 (diff = 2)	2 (diff = 0)	7 (diff = 5)
2	3 (diff = 0)	5 (diff = 3)	2 (diff = 0)	12 (diff = 10)
3	3 (diff = 0)	4 (diff = 2)	2 (diff = 0)	15 (diff=13)FAIL
4	4 (diff = 1)	9 (diff = 7)	7 (diff = 5)	11 (diff=9) FAIL
Average	3.25 (diff = 0.25)	5.5 (diff = 3.5)	3.25 (diff = 1.25)	11.25 (diff = 9.25)

Qualitative:

Test Observations:

- Regardless of how comfortable each participant was with the application, all users were quick with their actions (i.e minimal reading in between clicks, but rather brute force navigation)
- Participants scrolled up and down a lot before finding their task
- Participants showed visible confusion during Task 4
- Participants stated they are heavily using icons and emojis to help understand the directory.
- During Task 2 with Participant 1, after many operations, the application froze and needed to be restarted. This is definitely a client-side issue as this issue occurred numerous times under various network connections and devices.

Key Interview Observations

During the post-test interview, we asked all participants general and casual questions on their experience. All participants had varying inputs into what components they liked/disliked on differing characteristics, such as art style, location, and feature concept. However, when we asked them to describe their experience in one sentence, all of them used negative sounding phrases and words, particularly words such as “stressful” and “disorganized”.

Key Questionnaire Observations

- Participants found the layout and aesthetic of the application to be somewhat, if not very overwhelming.
- Messages after errors, empty queries or mis inputs were not helpful in guiding the participants in the right direction
- The usage of icons and emojis created a casual environment and assisted them in navigation. Participants found the sleep audio directory in Task 1 to be very intuitive and easy to find.
- Participants were not satisfied with the quality and location of the history feature in Task 2.
- The discover search bar for Task follows a common design and is easy to use.
- Breathing patterns feature (and adjacent features) were unnecessarily difficult to find.

Interpretations of Results

During our usability testing, one of the most striking observations we have made was how much our participants struggled during Task 4, in terms of navigation time and click count. The navigation from Task 3 to Task 4 took an average of over a minute and the number of clicks was over four times the optimal solution. The difficulty of Task 4 was exacerbated by the fact that all participants showed discomfort and confusion in the recording, and the fact that Participants 3 and 4 did not complete this task, resulting in the FAIL marker. Due to two failed attempts, the fact that all participants, regardless of their experience, have experienced it, and the participant's experience being "stressful", this is a *high frequency, high damage* issue and is our top priority in terms of changes.

Another key observation we have made during our testing was the fact that our user scrolled up and down numerous times before finding the feature that they were looking for. This was a common action conducted by all participants, however is not an observation of any major problems with usability, therefore we can conclude this to be a *high frequency, low damage* issue, which is an annoyance we may address.

We have also encountered a major bug in the client-side during one of our tests, where once the user interacts with many buttons in a short amount of time, the application grows unresponsive and must be restarted. This issue is major as it has a huge impact on usability, however it is quite difficult to force this condition, therefore this is a *low frequency, high damage* issue, and will have top priority in terms of changes.

Aside from key observations, we were also able to analyze how users interacted with mobile applications intuitively. Primarily, we noticed that users do not spend a lot of time reading fine texts, but rather navigate to directories based on noticeable signs, such as emojis or icons. With this analysis, we understand the impact of appropriate icons and emojis in terms of navigation and usability, which we find to be a major component in attractive UI's.

If we were to re-implement 'Calm' we would address the following:

1. Establish a dedicated section named 'Breathing Exercises' within the dashboard to enhance user accessibility. Previously integrated within the 'Discover' section, this move aims to facilitate users in locating the feature effortlessly.
2. Minimize the vertical length of each page or prioritize essential functions at the top to streamline user interaction, reducing the need for extensive scrolling to access frequently used features.
3. Integrate popup error messages to promptly alert users about any client-side issues, addressing error handling for empty queries and the current lack of responsiveness during periods of client overload.
4. Expand user control options and provide additional pathways for users to backtrack in the event of errors, enhancing user freedom and control over their navigation within the system.

Summary & Conclusions

In conclusion, the comprehensive usability test provided valuable insights into the strengths and weaknesses of 'Calm'. By calculating navigation times, error count, and qualitative inquiries on error handling and user preferences, we were able to understand the strengths and weaknesses for these 4 usability metrics. By conducting this test, we also gained valuable insight on the nature of the user's quick interaction with the application, and how using visuals rather than text can greatly benefit the usability of a UI design.

Appendix

Table 3: Final Questionnaire Results

	Participant 1	Participant 2	Participant 3	Participant 4
In 1-2 sentences, how would you describe the layout of content in 'Calm'?	I did not find the layout to be much different than the apps I currently use. It was difficult to find some of the features near the end, however.	Outside of the pretty look and typography, the layout seemed pretty disorganized.	The layout for the stuff we needed to find after the break was very dense and uncomfortable to work with. If it had instructions at the beginning, maybe I would've had a better chance.	The pages were very long and overwhelming to use. It takes a long time to absorb everything if you are a first time user.
In 1-2 sentences, describe how the application has/has not helped you fix any errors that you may have encountered?	The app did not help me troubleshoot the problem whatsoever once it crashed, which was confusing.	It was difficult to make major errors in the app, but it would have been nice to provide some pointers to guide me when using the search	I did not have too much of an issue with errors. I think its the user's responsibility to understand what they are doing before using the app.	I did not receive any much assistance when I clicked on the wrong thing.
Rate the 'Sleep' directory from 1-5?	5	5	4.5	5
Explain your choice above.	The layout seemed nice and I liked all of the celebrities. It looks very common.	I liked this component because of how neat it was.	Everything was easy to find, but the titles were not too helpful.	The grids were not confusing at all and pleasant to use.
Rate the 'History' feature from 1-5?	3	2.5	2	2
Explain your choice above.	The location of the history is awkward,but not impossible to find.	I would have preferred a dropdown at the top because that is where history usually goes.	The history should be at the top of the page instead of 'Featured'	It was too hidden in the page and hard to find.
Rate the 'Discovery' search from 1-5?	5	5	5	5
Explain your choice above.	It was easy to use and gave me the results I wanted	I liked that it was at the top of the page and the first thing you see.	The search was perfect. No complaints whatsoever.	Searching was comfortable and inviting to use.
Rate the 'Breathing Exercises' feature from 1-5?	4	3	1	1
Explain your choice above.	It was difficult to find as it was embedded in the directory. However, I liked the concept. It was very interactive	I needed to give a bit of effort in order to find it, but it was not too bad of a placement. The feature was fun also.	I did not find or use the feature, therefore I cannot give it anything more than a 1.	I did not like this feature at all. It discouraged me from using the app and doing the breathing exercises
Based purely on your experience, would you use 'Calm' again?	No. It is not my style of app.	Yes	No.	No.