Final Project Report

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# Background and Significance

Mental health issues, particularly anxiety and depression, have reportedly been increasing in the United States. According to the American Psychiatric Association (2024), a 2,000 person survey has revealed that 43% of participating adults have reported feeling more anxious in 2024 than the previous year, which marks an increase from 37% in 2023 and 32% in 2022. This rise greatly underscores the need for early childhood intervention given that it is the root cause of long term mental health struggles. Trauma, oversight, and a lack of emotional intelligence in our youth are factors that have contributed to adult cognitive and social disorders, and require strong emotional regulation to process these developments (Compas, 2014).Our project aims to support primary school children to become more equipped to understand their experiences and find ways to express their emotions, prompting them to develop the emotional intelligence and self-awareness necessary against the pressures of their future.

In reference, the issue of early childhood intervention has been intellectually interesting and necessary because the well-being of our youth directly impacts our functioning society. As human advancement accelerates, young individuals need to adapt to those changes; to learn and keep up with the rigours of society's demands in education and knowledge can become burdensome, but also maintaining mental well-being becomes increasingly difficult. The investment in individual mental health needs to be “juggled” with the external factors of finance, romance, etc. Without proper emotional awareness and coping strategies, a larger majority of our next generation would face symptoms of anxiety and depression and be unable or unwilling to properly digest their psychological struggles. As such, addressing anxiety and depression symptoms early in childhood, by fostering self-awareness strategies, can help mitigate these challenges before they escalate into adulthood.

# Existing Solutions and Gap Analysis

Academia and industry approach to youth and mental health has resulted in a large influx of existing solutions that have the potential to build individual emotional resilience. The most affordable and accessible option is a digital or physical journal, a form of self-talk therapy. This option to journal helps children self-identify their emotions by freely writing down personal thoughts, in a document that is open for personalization. However, the main issue regarding this solution is the current stigma to journaling, especially regarding children. Freely writing in a journal regarding intrinsic emotions may portray elements of vulnerability, which may discourage children from openly expressing themselves. In addition, the privacy to write in a diary completely mitigates supervision in any potential harm that a child may have experienced. Parents and guardians are not aware of what information is written on the diary, and can not openly look into a child’s journal for their privacy. Contributing to the limitations of a diary, the effects of self-awareness and emotional regulation requires children to be disciplined enough to contribute long-term meaningful work. Another solution that exists in industry is virtual therapy. Digital therapy platforms, such as BetterHelp, offer remote access to licensed and accredited therapists. The main concern of the provided therapists to the user is the issue that the quality of care for a therapist can vary, which may not be effective for all users. While digital therapy can contribute to actively engaging users in self-awareness, the limitation to consecutive usage of this platform is also the extensive costs. Betterhelp’s subscription-based system is not largely covered by insurance and ranges from $260-$400, and in addition, actively contributes to the issue of user data privacy concerns. The Federal Trade Commission (2023) shares that BetterHelp sold user information to third parties, despite their agreement to users for the security of their privacy and sensitive information. On the other hand, a current solution that is in early stages of research is immersive technology, which leverages artificial intelligence chatbots and virtual reality therapy. The product, XRHealth, exposes users who are currently facing current symptoms of anxiety and depression into an environment that they are comfortable in for psychological care; users would be able to personalize their environment using a virtual reality headset and receive therapeutic care at their convenience. This solution is another example of extensive costs, exceeding $276 for a monthly subscription as a basic plan, and reaching $476 for their premium plan. These monthly costs may exceed the costs for families to afford for children. The immersion of virtual reality also does not have a long history in research for prolonged usage by a child demographic, which puts children at risk of overstimulation and a reduction of engagement due to this risk.

Our solution, in addition to being a cost-effective and personalizable product, acknowledges that the majority of our demographic has not purposefully and consistently used the application in their daily routine, as referenced to the stigma and discipline necessary in other solutions. Many mental health products require the discipline to participate and lack the oversight to manage the user’s engagement. It is important, in a field that has an abundant field of solutions, to be able to act as an engaging tool, especially for a solution that would focus on a child demographic.

# Proposed Solution and the Implications

## Our Solution

Our solution is the renovation of a digital journal, with additions of modern advancements in technology and a proactive approach to consistency. Our decision to create a digital journal falls into the acknowledgement that self-talk therapy is an effective source of emotional regulation and positive self-awareness for primary school children. Burnett (1994) states “the absence of positive self-talk appears to be related to low self-esteem and depression in children”. Our features address future mental health concerns, utilizing self-talk and disciplined strategies, including asking preliminary questions, a journal, and a calendar page. The preliminary questions are meant to be insightful, and derive its questions from the Young and Hungry Podcast Instagram’s fun facts. As these fun facts have consistently been shared daily, the preliminary questions aim to do the same, making a routine of answering questions fresh, engaging, but also as a structured habit. Our team intends to procure the responses from the questionnaire, and recommend self-guided exercises and prompts to the user’s necessity. For instance, we would share videos of meditation stretches, general recommendations for the care of their mental health based on the responses made on the questionnaire and their personal journal entry. The journal is our direct form of self-talk therapy, an open platform aimed for children to freely write about their emotions and surroundings. The calendar page is the documentation that children and their parents and/or guardians can view to display days that a completed entry has been made and saved. Our solution takes into account the privacy and security concerns of our users and authorized users of their account, purposefully sharing completed entries of the user, not not its content, to parents and/or guardians. Further, our calendar system also includes a reminder system, similar to that of BeReal’s daily notifications, that notifies children and their parents/guardians to complete the preliminary questionnaire, as well as contribute to writing in the journal before the end of each day.

To manage the analysis of child responses in our questionnaire and their journal entries, our deployed solution would use OpenAI’s ChatGPT models, trained in the GoEmotions dataset. GoEmotions is specifically designed for understanding and classifying texts that are often influenced by emotional responses (Alon, 2021). For users with changes in emotional responses or a recurring pattern of mental health concerns, our model would be able to respond with resources appropriately, as well as categorize their mood in a visually appealing tracker. At this time, MoodMinder, our solution and its prototype, has been created using Figma. We have created our website demonstrating our team, solution, and its implementation results through the use of HTML, CSS, hosted on Netlify.

## The Implementation Process

In Weeks 1-2, our team was formed, allowing our members to self-assign roles to each other; Francis Luigi Lozano became our team lead, Harjot Jaswal is assigned as our CTO, Ann Bui is our UX lead, and Asher Wu serves as our product lead. In this time, all members conducted research on mental health solutions. In Weeks 3-4, we have developed the idea of our solution, and initiated our project proposal. Simultaneously, the product lead and the team lead created a google survey for user insight to our proposed solution, validating if our solution is necessary or not. Due to a lack of responses after sharing the survey onto 2 Reddit threads, we quickly shifted to interviewing UC Irvine college students on their experiences in their youth. In Weeks 5-6, our UX lead took the feedback from the insight interviews to develop a wireframe on Figma. After this point, the product and team lead began interviewing children and parents with the current wireframe to give feedback to the UX lead, who was actively making the low-fidelity prototype of our solution on Figma. For Weeks 7-8, our CTO began developing our website using CSS and HTML, a planned accordance until Week 10, while the product and team lead worked to get further feedback on the current prototype for the UX lead to consider. In Weeks 9-10, our UX lead was able to create a high-fidelity prototype in Figma, utilizing a specific user flow for user testing that the product and team lead used in interviews to develop feedback.

## The Deliverables

### The Prototype and Application Demonstration

Prototype Link: [MoodMinder Prototype](https://www.figma.com/proto/2M2NOH5pTrk7nAGt1DMeLM/MoodMinder?node-id=1-2&t=Dn3ksAcd1RNFBsC0-1&scaling=scale-down&content-scaling=fixed&page-id=0%3A1&starting-point-node-id=171%3A447&show-proto-sidebar=1)

Application Demonstration Video: [MoodMinder App Demo.mp4](https://drive.google.com/file/d/1nbNIO3SSCkGqFN9Whgjz5FpxylppshIc/view?usp=sharing)

The prototype link leads to the figma, where the MoodMinder app was created. On the left most side, there are different user flows set up such that either the child view or the guardian view of the prototype can be accessed. The second link leads to an application demonstration video, where the UX lead demonstrates typical user flows and interactions for both child and guardian views of the application.

### Code: <https://github.com/jot1919/172>

### Website: <https://jot1919.github.io/172/existing.html>

### User Persona and Story

We have focused our User Persona and Story on young children and the several factors that could lead to the need of our product. One of our user persona’s was [Sydney](https://drive.google.com/file/d/1FcTz-7TM0cP0K_ow0CjImOpoSJLa2WMQ/view?usp=drive_link), a 4th grade student, whose parents are asking her to write in a journal, but our persona lacked the motivation to do so. Our aim was to demonstrate the parental influence in making unmotivated children perform tasks. Another user persona was [Zoe](https://drive.google.com/file/d/1RuhR6W1Wmykoeqh9qLagA_O_nA6QRXwD/view?usp=drive_link), a 5th Grade student who wants to improve her poor habit in emotional regulation and awareness. Zoe signifies the group of children who intrinsically wish to make a difference in their habits, but have not purposefully acted upon it yet.

### Research

Our research began with a [Google survey](https://docs.google.com/forms/d/e/1FAIpQLSehG3FJAoG9w7alY8E1AK7J-5NmIlEaVIsgPdp_aW0YSvVT0g/viewform?usp=sharing) for initial insight in our product’s mission. This survey was intended to be shared to children in primary school, parents, and college students. We distributed this survey to 2 school Reddit threads but did not receive any responses to make meaningful conclusions in the creation of our product. Due to the lack of responses in our survey, we transitioned into hosting more qualitative interviews with UC Irvine college students, and compiled our interviews titled under [Insight Interview Protocol](https://drive.google.com/file/d/1c5wPtYHcQdb5YsakMSBi0xjlVZvA3uYZ/view?usp=drive_link). In our protocol, we held 5 interviews to understand how they managed their mental health during childhood. Each of our interviews were made from existing connections made on campus, allowing us to collect meaningful data from initial proximity. However, we found that our intended demographic would not actively use our platform in consideration of other forms of relief. Our interviewees shared that, in their childhood, exercise, social media, and virtual entertainment were alternatives to using a self-talk therapy device, which contributed to their lack of coping mechanisms in their childhood. To encourage consistent behavior to a beneficial platform, we diverged from simply an idea of a digital journal to one including parental supervision, reminders, and notifications.

In the early creation of our [product’s wireframe](https://drive.google.com/file/d/1xolMKLqOKO6tGCiTh13WOdeOdfdwhK74/view?usp=drive_link), and including the additions from our insightful interviews, we conducted 6 additional interviews, consisting of 5 children and 1 parent, which can be found under the [Wireframe Interview Protocol](https://drive.google.com/file/d/1qST9XUuBzhkUPIMQQdyQ468WH6xOfiql/view?usp=drive_link). These interviewees were made through personal connections from Cal Aero Preserve Academy in Chino Valley. Interviewees were asked to review a [sketch of our wireframe](https://drive.google.com/file/d/1iAZgsp0dguq3vhDrACNHL4RBfsiE1EvD/view?usp=drive_link), and its incorporated elements produced from our wireframe. A key observation from most of our interviews was the questioning of how necessary the AI components we have integrated are to our digital journal. In our original design, the artificial intelligence that was used acted as an [artificial chatbot](https://drive.google.com/file/d/1MxJYPpw_Imvir0K6SU_gG5vbE-RtLBZH/view?usp=drive_link) for users to conversate with. However, an oversight that we made was that there would be an abundance of ways that users will have to write in; through the daily questionnaires, the journal, and the AI Chatbot, our participants did not express gratitude for the many writing features in a basic solution. As a result, our team simplified our product by removing the AI Chatbot, creating an uncomplicated self-talk application.

Following this adjustment, our team performed another round of interviews to gain more insight into the [second iteration of our wireframe](https://drive.google.com/file/d/1gvA97-Ke7bCrpke2zLdii8Eq210EYCPW/view?usp=drive_link). In our [Wireframe Adjustments Interview Protocol](https://drive.google.com/file/d/1lbDOdGCQfzWUYT2Rj4K-tblDx93aDcHY/view?usp=drive_link), we collected the interviews of 5 people, including pre-existing participants and new participants for familiarity and a diversified perspective in our product. Similar to our past interviews, our participants were personal connections from Cal Aero Preserve Academy, as well as mutual connections from past interviewees. Through each of our interviews, we focused on understanding how our demographic would interact with our daily questions. From our interviews, it was indicated that our interviewees preferred to answer 4-5 questions, with a preference for multiple-choice questions over open-ended questions.

In refining our wireframes, based on participant feedback, our team was able to advance to the creation of a high-fidelity [prototype for children](https://drive.google.com/file/d/1iN3nFuD-o7oCYS1Dfa6TEPtF5mvwrPQJ/view?usp=drive_link) and a prototype for parents and guardians to supervise child accounts. Inspired by our group name, the “LA Lakers”, we incorporated a circular theme with purple colors as our visual design. We interviewed a last round of participants for this feedback on our design and basic functions, cumulated in our [Prototype Interview Protocol](https://drive.google.com/file/d/1OGEJqf6Cy0RXkPzoSRTBuZjDFiGkjfQE/view?usp=drive_link). Our participants came from pre-existing interviews, as well as mutual connections from our past participants, to reemphasize familiarity in our solution and an expansion of the represented users of our research. Our interviewees performed user testing and shared that the colors used for design were too distracting, and as a result, had our team transition to a lighter color palette for our prototype design for both the [child](https://drive.google.com/file/d/1ECtk_Z8ZbgUVaoGnLgEqRUKDhcyZaLI8/view?usp=drive_link) [user](https://drive.google.com/file/d/1hhwz-RX4aFNustAtFGNWUoa-sc8F06tE/view?usp=drive_link) and the [adult supervising perspective](https://drive.google.com/file/d/1O85BHVd4aUvNjTcCib4oMOfLxwa-Ill3/view?usp=drive_link).

# Group Experience

As a team, we have learned that working in a group, especially one that is new, involves communication beyond what is normally expected. As we realized over time, the issue of communication was caused by a lack of initiative beyond our mandatory team scheduling on the syllabus. For instance, in the first weeks, our team gave each other tasks but worked individually in the prototype, interviews, and the website, and only gave updates during scheduled times to meet as a team. The lack of coherent information shared across the evolving project had our interviewers knowledgeable of our wireframe’s feedback, but our prototyper was unaware of the need to make changes until our next team meeting. As a result, they had to make adjustments to remove features, such as our AI component, after the low fidelity prototype of our solution was already created. To address this, in our second iteration of our prototype, we actively met on Discord voice channels to share updates to our individual tasks and actively asked for feedback. The website coder and our prototyper would share concerns and images of their progress to the team lead for active feedback, which also allowed the team lead to share feedback from the interviews. Moving forward, we have been able to address our communication issues and complete deadlines that we have set for ourselves.

# Limitations and Future Plans

A limitation to our work is the research demographic. Our interviewees were not impartial; our team was able to find all of our participants from our insight interview through personal connections at UC Irvine. This could have accumulated to biased feedback. In addition, our participants that reviewed our wireframe and its iterations were also made through personal connections with our group, and mutual connections with our participants. This small sample of our demographic constraints our solution from being able to be appealing to a larger audience. Given more time and resources, we would have been able to accumulate more responses in our Google survey, as well as sought after a more diverse group of interview participants for fair representation. This would be beneficial to our research as we are aware a main weakness in our solution is the lack of interest in children and their mental health, which is why diversifying our participants who are unbiased and having more time to make a product that also appeals to parents and guardians, can get more children to actively participate.

Additionally, our current prototype was made with a specific user flow, rather than a complete product system. Our aim was to provide proof of concept, with the main focus being user interactions with navigation and our user interface. Our team wanted to make sure that our application addresses main elements where our users would meet unexpected errors, and have our team resolve that issue. However, given more time and additional members, being able to move beyond process bottlenecks into a product that would become deployable would be possible. For instance, our prototyper needed feedback on the style and theme of our product, but they needed to wait for feedback from our interviews, which made prototype development slower than expected in a 10 week course.

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