Group 22
Team MedBeats
Track 3: Music as Medicine
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Background and Significance

Undergraduate students who transfer to a new institution experience mental health issues at an accelerated rate compared to their undergraduate counterparts. With limited resources, trouble sustaining social connections, and less campus involvement, the transfer student population faces depression, anxiety, low self-esteem, and poor academic performance (1). Transfer students report feeling alienated from their desired universities because of the lack of inclusion and report anxiety and doubt about their academic preparedness (2). Otherwise known as transfer shock, transfer students enter a new environment where they may not feel accepted. Due in part to transfer stigma, transfer students at four-year institutions are considered to be academically underprepared as a result of experiencing transfer shock. Progressing into internalized stigma, transfer students believe they're academically incapable compared to non-transfer classmates (3). Manifesting itself in negative perceptions or low self-esteem, it can lead to depression or anxiety, impacting academic performance, relationships with peers, and cognitive thinking (4). This is an interesting problem as the needs of first-year students and current students often overlook their needs, demanding an intervention to ease their transition and support their mental health.

While acclimating to the desired institution is essential, the transition and progress to transfer are equally important. A study on transfer students' self-efficacy, motivation, and need for social support before transferring to their desired institution underscores the importance of mental health. It reveals that students who are disconnected from the institution they are transferring from and receive inadequate advising support are more likely to fall into mental health struggles (5). Moreover, the study highlights the immense stress transfers must endure when navigating the transfer process, especially given the variety of agreements, limitations, and conflicting information between institutions. With an unclear and overwhelming experience, transfer student's mental health declines.

A promising intervention is through music. Scientifically proven to benefit the human body and mind, music is a useful intervention to help patients suffering from mental health illnesses. Music can be applied via music medicine by allowing patients to listen to pre-recorded music playlists through MP3s with headphones or speakers. The second option is via music therapy. It enables medically licensed music therapists to provide personalized music playlists influenced by the patient's background (6). Altogether, music as a medical intervention has proven to have beneficial effects on anxiety and pain for individuals and can definitely help transfer students with their transition and mental health needs. Music first gets processed in the nervous system and impacts the endocrine, autonomic, and immune systems, which leads to reduced subjective stress levels and emotions (7). For instance, listening to classical music produces dopamine, reduces cortisol, and improves brain function (8). This can be an invaluable tool to help transfer students ease their adjustment, especially if music can be specifically catered to their needs. Overall, studies suggest the need to intervene in students' academic journey to transfer. Students need a supportive tool that encourages them while they navigate the transfer process and ultimately transfer to the new institution. With an overwhelming experience, serving the mental health needs of the transfer population is of significant priority.

Existing Solutions and Gap Analysis

Existing solutions that use music to address mental health needs and well-being are abundant but fail to appeal to transfer students and their unique transfer process. Firstly, general

music streaming service apps like Spotify and Apple Music allow users to listen to relaxation playlists that are not tailored to specific medical conditions or patient-reported symptoms. Take, for instance, Spotify's "Heart & Soul" initiative, which intends to help individuals with mental health needs through curated audio and music playlists like "peace meditation," "piano for healing," and much more (9). These playlists aim to break stigmas and boost well-being; however, they may not appeal to all audiences. This is why music streaming apps have limitations, as they require manual input from users to create playlists with the options available or listen to premade ones. Moreover, mindfulness apps for meditation and wellness, such as Calm and Headspace, provide music-based relaxation techniques and exercises but lack real-time personalization based on symptom tracking. For instance, Calm limits its users to only tracks created/recommended by Calm. Regarding Headspace, despite excelling in mindfulness meditation, it has a limited selection of music choices and does not provide personalized playlists. Additionally, both apps prevent users from transferring the music they listen to on music streaming services onto Headspace of Calm. These apps are great resources for practicing mindfulness and well-being but restrict users from incorporating their music. Music therapy programs also exist and work by helping patients create personalized playlist, and help manage anxiety, stress, or pain (10). While music therapy is an incredible method for mental health distress, it requires direct access to paid, trained music therapists. Students may avoid music therapy due to cost, availability, and accessibility issues. As a result, an innovative app intended to be an outlet where students can quickly write their thoughts while also being easily accessible at any time is a possibility.

As we can observe, current solutions are limiting, lack personalization, and fail to incorporate real-time personalization. Current solutions fail to provide customized content and experiences to users based on their immediate interactions and situations (11). But what if a simple, personalized solution to ease their transition existed? A music therapy-based app powered by artificial intelligence (AI) can bridge the gap that current solutions are missing. This music therapy-based app can cater to undergraduate transfer students' transfer experience and mental health needs. Through this app, transfer students would experience reduced stress and anxiety, improved mood, and improved social connection. AI's capabilities can enhance these benefits as it has proven to create effective personalized music playlists for moderate anxiety (12). This app would be a great intervention since music playlist interventions that value personalization improve emotional well-being and reduce psychological distress.

Proposed Solution and the Implementation

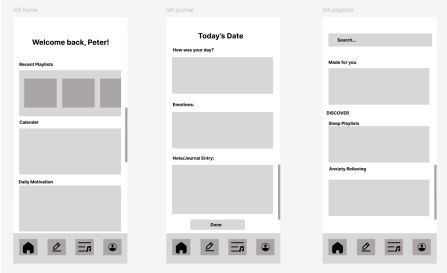
Introducing MedBeats, a journaling app that will help serve students before transferring to their desired institution and further assist them throughout their academic endeavors. MedBeats intends to help students journal their thoughts and feelings and recommends music to facilitate transfer shock and the accompanying academic hurdles, stress, and problems. We understand that the path to education is not easy, and we aim to create a personalized app and environment where students can feel supported. This is a transformative app built to help transfer students navigate one of the most challenging transitions of their academic careers. Infusing the healing powers of music with AI's capabilities, the app will analyze each designated journal entry and the user's preferred music genre or artist and develop a custom playlist specifically tailored to their current feelings or mood. We anticipate that for transfer students who experience stress, depression, anxiety, low self-esteem, or poor academic performance, this generative playlist will help them relax. Coupled with supportive daily quotes and affirmations/recommendations on how to unwind, we expect that MedBeats will be the necessary tool for academic success. Unlike other apps, we do not limit students' music selection and understand that a personalized app will empower them as transfer students.

The Implementation Process

3a. Research

Initial research involved understanding a public health problem that demanded quick attention and how music, as medicine, could help remediate that issue. We first wanted to focus on physical therapy. Throughout our research, we better understood music's medical application and its impact on medical problems and mental health. We believed that a journaling app could help patients with their medical conditions, and with the help of AI, their entries would be analyzed to provide feedback and create a music playlist that appealed to them. However, through more research, accessibility issues, and time constraints, we shifted our goal to helping transfer students. We gathered articles and studies on transfer students and were intrigued by the issues discovered. Furthermore, having two of our team members as transfer students helped us build a strong foundation for MedBeats and develop an understanding of the transfer population. We then agreed this app could incorporate three main features: journaling, AI use to generate personalized music playlists, and daily motivations/affirmations.

With this in mind, our UX design lead initially created low-fidelity wireframes to envision our three main pages: the home page, journaling page, and music library page. Creating the first prototype of MedBeats, as seen in the following screenshots:



Before creating MedBeats, we decided to survey transfer students. By understanding their needs, wants, and experiences at a four-year institution, we would be able to verify if our findings were correct. Through a qualitative research survey on Google Forms, consisting of 16 questions, we asked transfer students about their transfer process, mental health, music use, and interest in an app like MedBeats. They were asked to rank the difficulty of their transition, the biggest challenges they encountered, and the emotions they experienced. Regarding music, we wanted to know why they listen to music, if music is used as a coping mechanism for stress, and if they currently utilize mental health or meditation apps. In regards to the questions for MedBeats, we asked if they were interested in using a journaling app that creates personalized music playlists and provides mental wellness tips based on your mood or stress levels, how likely they were to use it, if they were comfortable with the use of AI to analyze their journal entries, if MedBeats could have helped them to prepare to transfer, and currently as transfer students, and lastly, what features of MedBeats they liked: personalized music with the use of AI, journaling thoughts, or compatibility with Spotify and Apple Music. This survey was shared with transfer students across UCI's Transfer Student Center, discord groups, and other online forums. We received 18 responses and learned a vast amount about transfer students.

Data Analysis/Results:

Firstly, 55.5% of transfer students who were surveyed reported moderate difficulty in their transition. More specifically, 72.2% of respondents struggled with socialization, indicating a struggle with isolation and difficulty adapting to a new environment. This was further reinforced by respondents having trouble adjusting to the new school system. Other responses showcased struggles with mental health and stress, highlighting the emotional toll of the transfer process and having trouble finding transfer resources. Furthermore, 83.3% of respondents reported feeling uncertain, 72.2% anxious, and 61.1% overwhelmed navigating the transfer process.

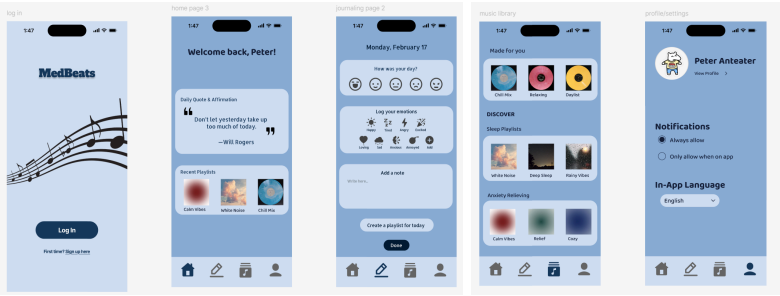
Regarding listening habits, students mainly listened to music to relax, study, or concentrate, but 42.9% of students always listened to music to help manage stress and anxiety.

Regarding student interest in MedBeats, most respondents indicated an interest or slight interest in a journaling app like MedBeats. Students seemed interested in using the journaling feature to write their emotions or moods, and 72.2% preferred being given prompts when entering journal entries. In regards to AI use, most respondents (66.6%) are moderately comfortable with AI-generated playlists. However, it was indicated that respondents preferred full control over their selections with optional AI recommendations or with a mix of AI use and personal choices, suggesting the acceptance of AI but having a strong preference for user autonomy. 83.3% of students also indicated that they would like to have integration with music platforms like Spotify and Apple Music to incorporate music they already listen to.

When asked about the potential of MedBeats, 55.6% of respondents believed that it would have helped them better prepare for their transfer process, and 66.7% believed that it would be useful in managing academic stress and adjusting to campus life. Additionally, 72.2% of students value journaling and writing down emotions and feelings. Meanwhile, 50% of respondents favor personalized music playlists and AI-generated recommendations. These insights demonstrate that MedBeats must prioritize integration with the music they listen to, incorporate journaling features, and allow for AI-driven playlist recommendations to ensure user engagement and well-being.

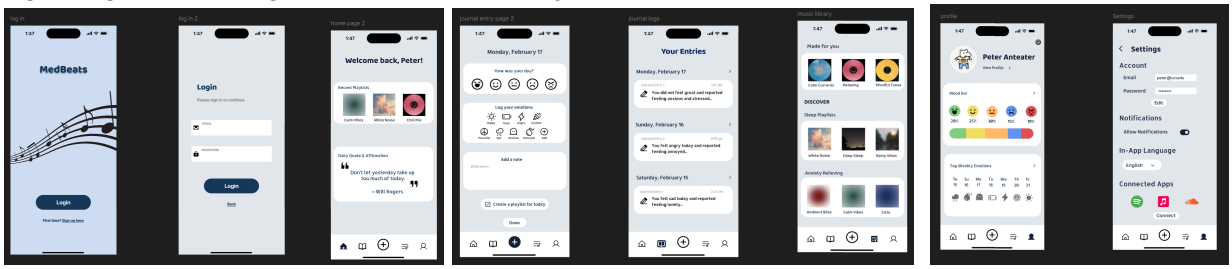
Altogether, the survey data reaffirms our research, highlighting transfer students' challenges with their mental health, social connections, and academic life. Over 70% of transfer students we surveyed reported struggling with socializing and mental health stress and over 55% of respondents believed that MedBeats would have helped them better prepare for transferring. There is a clear demand and need for mental health support tools tailored specifically to their experience. These findings reinforce the need for MedBeats.

After analyzing survey responses, higher-fidelity wireframes were developed. These wireframes show the app's better flow and functionality. A new launch screen and settings page were also created to allow users to modify notifications and the in-app language:



Next, we reached out to students who took the first survey to be interviewed to receive more in-depth feedback on the development of MedBeats. Students were shown a video of the app’s functionality and features. Features included the launch screen, the home screen with daily quotes and affirmations, the journaling screen, the playlist screen, and the user profile screen. Then, students were asked for their general opinion of the app. Some took a liking to the app's user interface/layout, stating that they liked its simplicity and straightforwardness. One student commented, “I like the simplicity of the app, everything seems simple to understand.” However, the app's colors were up for debate. One student suggested that the background colors should be customizable, another did not like the blue-on-blue colors, and another liked the colors but mentioned that they should be reflective of their emotions. Furthermore, two students agreed that the MedBeats logo should be changed into a more unique font. One student highlighted that the accounts page looked empty. In terms of the contents and functionality of the app, one student commented that they liked the wide-ranging emotions available to them, especially the ability to add additional emotions. Some questions were about

where the Spotify/Apple Music account linking feature was, where their journal entries would be located, and how they would access them in the future. Thus, with the collected feedback, our UX design lead updated the appearance of MedBeats to reflect the features students wanted, like music streaming services compatibility, changing the background color to white, creating a login page, and a page to access previous journal entries.



3B. Group Experience

Working together for MedBeats was an enriching new experience for everyone. We share our experiences, strengths, and learning outcomes in the following:

Hamilton Ko: “What I learned from this group and my experience working with them was getting to know each person’s strengths and utilizing them to help the group reach their goals. This helped to ensure that everyone was actively participating in some way to the project and had something to be in charge of. Knowing their strengths led me to get to know them better and understand which tasks were best suited for who. I also learned more about effectively communicating in a group environment and ensuring that everyone knows their responsibilities.”

Danny Chen Lin: “Working with the Medbeats team environment taught me the importance of clear communication, adaptability, and collaboration. I learned to be keen on each team member’s strengths and how they would best fit certain tasks. Due to our busy schedules, it was hard for many of us to schedule times to meet and meet deadlines sufficiently in advance to allow for revisions. However, effective communication and individual accountability were key in allowing us to achieve our team goals efficiently.”

Leticia Morales-Ruiz: “Working in this group was able to teach me how having people with different skills is really beneficial to teamwork as everyone was able to work in the area they are strongest in. As I have more experience with UX design I was able to use my skills in designing the wireframes and mockups of the app as well as the prototype. In the end I learned how important it is to have a well-rounded team as well as communication to make sure the project turns out as best as it can.”

Irvin Yacir Zarate: “Working together on MedBeats was a new experience for me, especially given my background in Public Health. I learned that our group had strengths that we could use to our advantage and easily complete our assignment. Through clear communication and collaboration, we trusted each other to complete our assigned tasks. It’s important to establish one method of communication and have weekly reminders. Overall, we had a clear goal set in mind that helped us complete our final project on time”

Limitations and Future Plans

As a team, we agree that our app faces a number of limitations. Firstly, we understand that the effectiveness of a music therapy-based app will vary amongst students. Additionally, incorporating the integration of music streaming platforms may require legal agreements that may pose financial or legal challenges. Most importantly, MedBeats relies on user input, and its effectiveness can be diminished if students are not consistent with journaling.

With more time and resources, MedBeats would be one step closer to publication. We would conduct more UX research and let users operate the redesigned app. With more feedback about the app and allowing users to better navigate MedBeats, we would create a better refined and fully functional app.

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