

Improving Student Health Through Digital Therapeutics Applications

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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Improving Student Health Through Digital Therapeutics Applications

Digital therapeutics as it exists within the context of modern systems is very much a nascent field with large potential for development and improvement. While the benefits of the variety of non-digital therapeutics are undisputed, the switch to making such resources available in digital and online formats has not been easy. Although new and innovative companies and universities have made significant strides towards the general acceptance of digital therapeutic methods, change often comes at a pace that may appear slow to many observers. One of the multiple challenges that these groups face when researching and developing digital therapeutics is the highly individual nature of many therapeutic concerns. Typically, different individuals needing vastly different approaches to reduce stress or achieve some other desired outcome. To this end, the digital therapeutic that I and Alexandra Grace developed has attempted to target a particular audience. College students, and students at the University of Virginia (UVA) in particular, provided a sufficiently narrow target audience with which to develop therapeutics to aid in the overall health of participating individuals.

Digital Therapeutics

Moving therapy to a digital medium is no simple task, though many have tried (and succeeded) in doing so. One of the things that often behooves such a move however is not

necessarily just because of the ease of distributing such therapeutics, although this factor cannot be ignored. Much recent study has been devoted to the topic, and the results are nearly unanimous in the overall use and efficacy of several of these solutions. A recent study published in 2020 by Ponzo et al. found that upon the introduction of a digital therapeutic application (in particular BioBase), users in the test group showed a marked decrease in stress and depression as compared to the control group. Even more poignant was the fact that this study was primarily composed of college students and young adults. Given that these two groups of individuals have historically had particular difficulties with these issues, and that depression especially is on the rise due to the extenuating global circumstances, the findings of this particular study appear to be quite relevant.

Another quite interesting application of digitalizing therapeutics has been in the digital delivery of intensive Cognitive Behavioral Therapy (CBT). With the goal of helping users apply and implement healthy lifestyle changes without having to go to a physical therapist, yet another benefit to the digitalization of therapy has emerged. Although such an idea is a bit beyond the scope of the application developed here, the study conducted by Kim et al. (2020) seems to indicate noticeably positive results, especially in the case of obesity and overeating. The potential for introducing such behavioral therapy to continue to target unhealthy behaviors that are likely to persist among students both on and off campus seems to be extremely promising.

Finally, there is a great deal of information pertaining to the benefits of meditation, especially in offsetting stress and combating depression amongst individuals. As meditation is the particular focus of the developed application, it seems appropriate to briefly review a tiny excerpt of the vast amount of material available on the topic. In an article published in the *Frontiers in Psychiatry*, Heuschkel and Kuypers noted that while protracted mindfulness

meditation (practiced regularly over the course of multiple years) is a definite indicator of healthy habits, even meditations performed regularly for only a few days can have notable effects on the mood of participants, decreasing the chances of high anxiety (2020). All in all, the effects of therapy are well documented and the ease with which digital media is able to spread information combines well in digital therapeutics, providing a good deal of hope for happier and healthier standards.

Application Features

The app that was developed focuses primarily on the meditation aspect of digital therapeutics, but effort was made to ensure that the other aspects of the app worked in tandem in order that users could be given a smooth and relaxing experience. As shown in Figure 1 (below), the main page of the application included a prominent breathing gif that aims to slow the breathing to a more regular and governable pace.

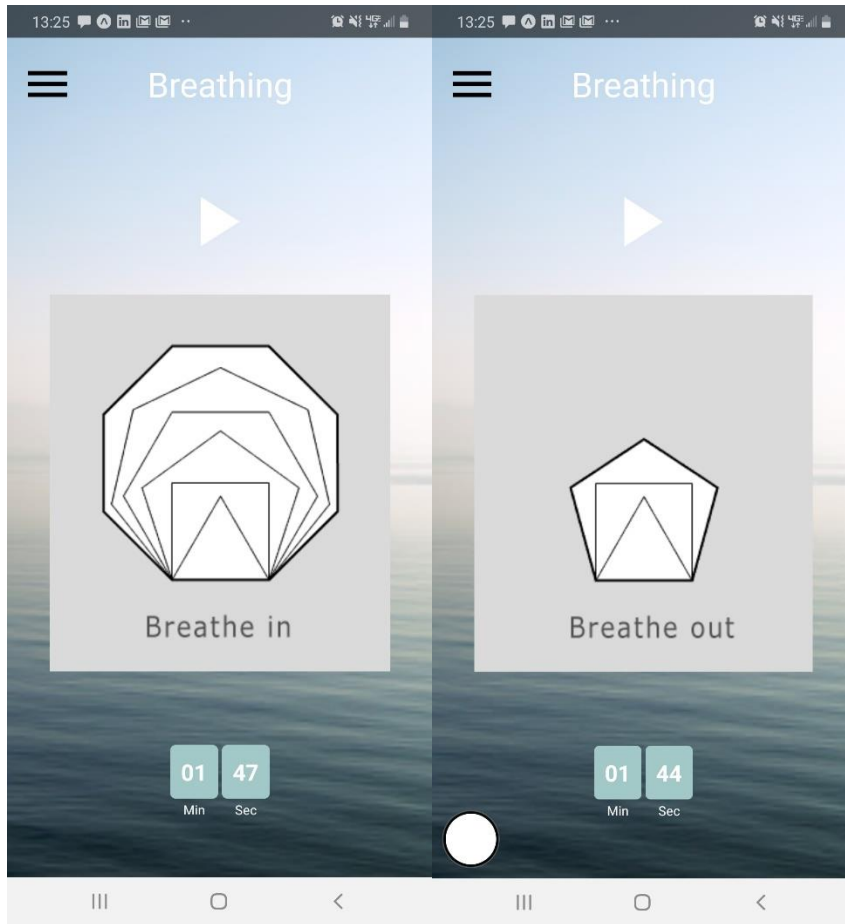


Figure 1: *Breathing homepage with timer and background music*

The purpose of the timer is to provide a set block of time with which to calm the user, while also giving the flexibility to allow the user to continue for more time should it be desired. As shown in Figure 1, the application also includes a play/pause button which at time of development played calming open-source music. Another feature of the app was to allow users to schedule meditation time periods, with a specific page of the app being set aside particularly for this point (see Figure 2 below).

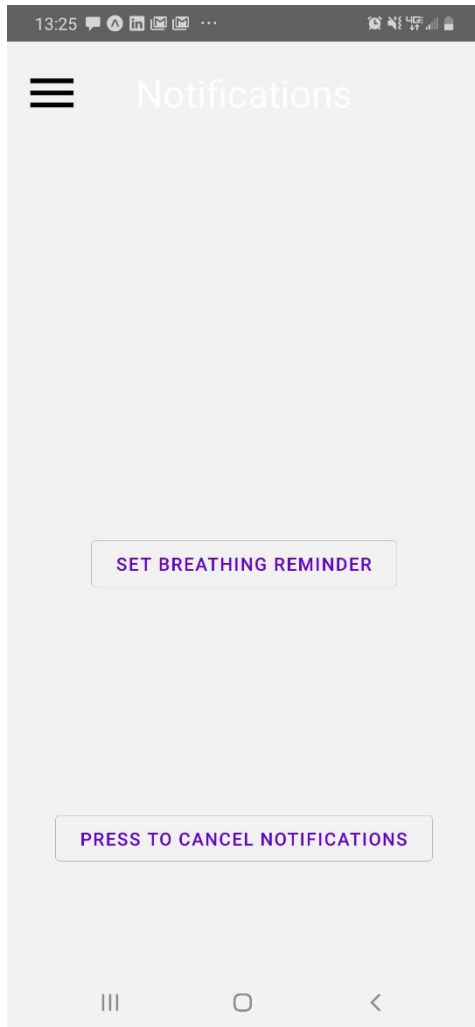


Figure 2: *Notifications page, with reminder and cancel buttons for user convenience*

Upon clicking the “Set breathing reminder” button, users receive a push notification every twenty-four hours from the time of pressing the button. These push notifications can be cancelled at any point by clicking the “Press to cancel notifications” button. Such a setup not only provides the user the possibility to maintain a more structured schedule for their meditations, but also the flexibility of cancelling and rearranging the times at any point. The idea of helping users remember these activities is important as often the busy concerns of student life can make

forgetting calming routines incredibly easy. The push notification system provides another layer of protection against forgetfulness.

Another feature that was developed in order to provide another layer of usefulness and motivation to the user was a login page. Keeping track of different users within the system allows the developers to potentially add future functionality such as rewards and personalized therapeutics, barring any potential difficulties with privacy within the community. As shown below in Figure 3, the login page was designed with usability in mind and provides the app with a good deal of flexibility regarding future therapeutic and motivational features.

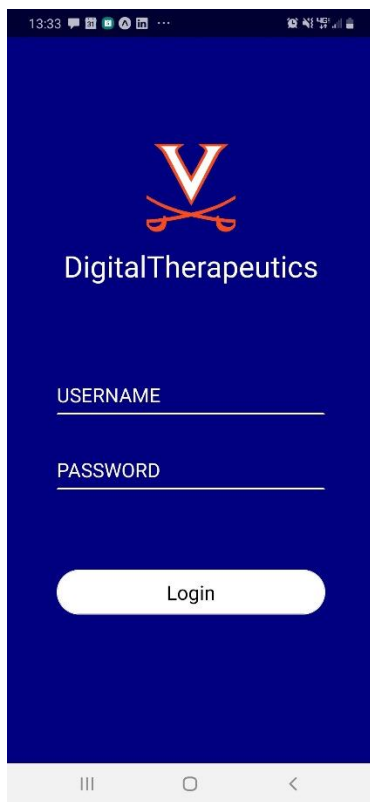


Figure 3: *In-app login page complete with UVA colors and logo*

Conclusion

While development of this application is certainly not finished, there are a large number of features that will be relatively simple to implement. Perhaps most importantly, I learned quite a lot while researching and developing this project. Many of the ideas that ended up getting implemented in by different features in the app (such as meditation and breathing regulation) I found quite useful in everyday life. Maintaining a healthy lifestyle is an incredibly difficult challenge when faced with the difficulties and stress that college life typically includes. Finding digital therapeutics broadens the options that are available in order to achieve the goal of a healthy life. Even though many of these ideas, despite being in a relatively novel field, have already been implemented and researched in various ways, there is still much to learn. Hopefully, the development of this digital therapeutics application specifically for UVA students will provide some small help to those students or even faculty who have trouble setting aside time to step away from the rush and calmly reflect.

References

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