Hap App: A Mobile Design For Depression

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ABSTRACT
Among the most common diseases of all age groups, mental health problems rank the top, with depression being the most serious illness. Due to the rapid development of smartphones, numerous mental health mobile apps (MHapps) are available to use. However, most of them emphasize on medication, psychological test or some other limited functions, lacking interactive functions that give users a sense of immersion. Loneliness is one of the most complex problems for depressions, but this is not solved in most current apps. In this paper, we present our design of an interactive app, Hap App, for depression in a way of combining static text-image with dynamic 3d virtual characters, which aims to build a friendship with user. Gamification and funny selfie-camera are also utilized in the app to make it more attracting. Thus, this app contributes to HCI in the field of healthcare and appears more interesting and user friendly in achieving the goal of uplifting the depressed people and strengthening users' adherence.

Author Keywords
Depression; Mental Health; Virtual Friend; Gamification

ACM Classification Keywords
H.5.m. Design, Human Factors: Miscellaneous

INTRODUCTION

According to records of World Health Organization (WHO), depression is a common illness worldwide, with an estimated 350 million people of all ages affected. Depending on the number and severity of symptoms, a depressive episode can be categorized as mild, moderate, or severe. At first, it's accompanied by long-lasting low spirits and anxiety. At its worst, depression can lead to suicide. It can be controlled with effective treatment but cannot be cured. However, in many countries, fewer than half of those affected have access to know and receive appropriate treatments [1]. Depressed people do not want themselves seem different from their peers and may not even notice they are in depression. That makes the diagnosis of depression much more difficult so that the depressives' condition could get worse.

Recently, there has been an increasing number of mobile applications incorporating technologies into mental health treatments [6]. Numerous mental health apps (MHapps) and alternative technology based solutions have the potentiality to exert more influences in future mental health care [9]. The current apps reduced user's pressure by offering medication, judging whether the users have depression by doing psychological tests or letting users track their own mood with self-report. In a recent survey, 45% of individuals with mental illnesses were making use of smartphones with embedded sensors to self-track their mood, 80% of the subjects thought it can help them manage their illness [5]. While these MHapps target at promoting a health lifestyle through multiple methods, they are not designed for a specific user population, which may largely reduce their effects. Users with different personalities can act completely different in taking advantages of the same app. Furthermore, the limited choices and functions of these apps lack interaction with the users and will finally lead to users' loss. A serious depressive patient may need more professional help than a mild depressive patient but the app only shows them the same result.

Our efforts to fix above-mentioned problems are displayed in the mental health app, Hap App, a mobile design for depression. The leading merits of Hap App are twofold: first, my app combines of both static text-image posters and dynamic 3D virtual guide; second, it's fully interactive and based on multimedia experience. The process of making use of this app is like opening a box of chocolate because the users don't know what they will get till the last second. What the users need to do is tell the app how they think. By talking with a virtual friend, a panda, the users can click on what they would like to do and even type into their specific problems. These functions make the app more interesting and useful thus having stronger effects on encouraging the specific users.

DESIGN CONSIDERATIONS

Our consideration is based on that depression is not only a matter of mental health but also a matter of physical health. Moderate or serious depression can cause a person to lose basic self-care abilities. The patients will need more professional treatments and take medicines following the doctor's instructions under that circumstance. Here, we discuss Hap App as a nonprofessional supplement to other therapeutic methods, especially about its goals, how it came into being, its main functions and the comparisons with other MHapps.

Goals

Hap App is designed to help those who are in depression or have no ideas about their mental problems. Most depressive

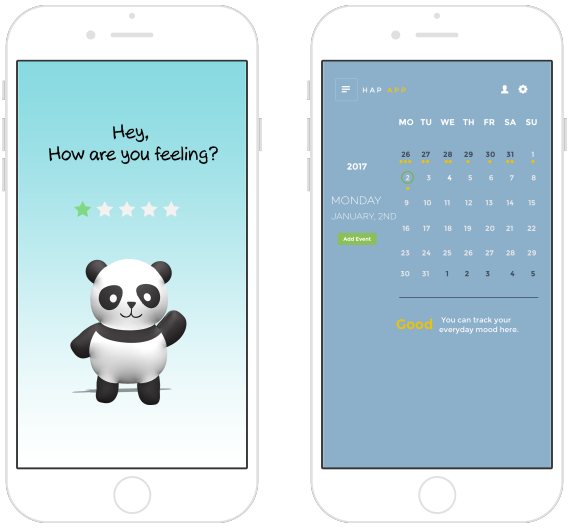
people have experienced the feeling of being stuck at the bottom of a deep well while cannot find one to help them out [7]. Even their closest friends, families, lovers cannot understand what they need and why they don't feel well since they just look fine. However, they do need a place to release their pressure and talk with somebody. That is also the aim of Hap App, providing the users with a virtual friend to talk to and offering a private place for entertainment, just as the name of the app indicated, "Hap" is the abbreviation of "Happy".

Functions

In presenting the outcome of the app design process, we focus on the central design elements of this user-facing app, how they emerge from the initial design blueprint, and how they are made to be interactive and reachable.

Mood-Tracking

Hap App allows users to rate their daily life ranging from one to five stars (Figure 1a). Notes can also be used to record additional information, such as an event that made the user feels sad or one thing that cheered him up. These data can be very helpful when he or she wants to visualize the mental condition in the future.



(a) HapApp Rating (b) Mood Calendar

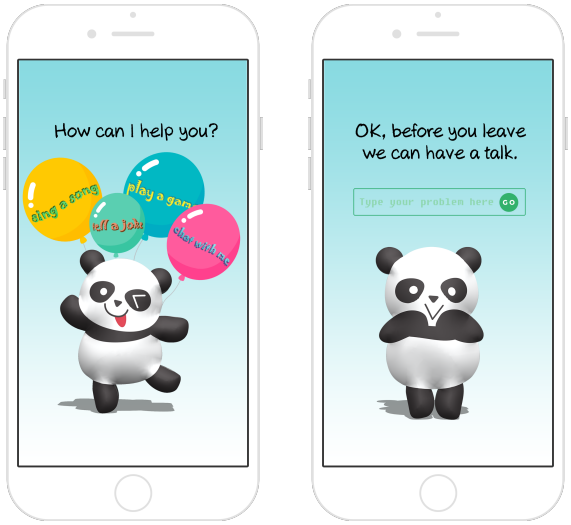
Figure 1: Self-Tracking

The mood calendar displays user's mood changes in the form of a calendar (Figure 1b). The yellow dots under each date represents the stars users chose for that day. This function will help users form the habit of recording their days and make it easier to observe their mental conditions. The data later on could be used for providing users with better recommendations. Professional therapists could use this information to expedite the development of a treatment plan [8]

Virtual Guide

Like any other people, depressive people also need to talk with others. Acting as a virtual friend who can give the users a hand is also one of the main functions of Hap App. The character is a cartoon 3D panda, which is different from most other E-pets like cats, dogs or rabbits. Due to its chunky appearance, a cartoon panda may make users feel trustworthy and interested so that it can be considered as either an E-pet or a talking animal friend.

Besides rating a day, Hap App has more functions. When users choose less than three stars, the system will tell that users are not so good and the panda will ask users why user are not happy. After the users type in their responses, for example, "I just got dumped", they can choose whether they need the panda's help. Clicking on "Yes" will take the users to another page on which they are offered another four choices (Figure 2a), such as letting the panda sing a cheerful song, tell a joke, the user can also choose to play a game or just talk with him. One reason of applying gamification to application is to motivate users to engage in the system with pleasant experiences.



(a) Help Screen (b) Conversation Screen

Figure 2: 3D Virtual Guide

Funny Selfie Camera

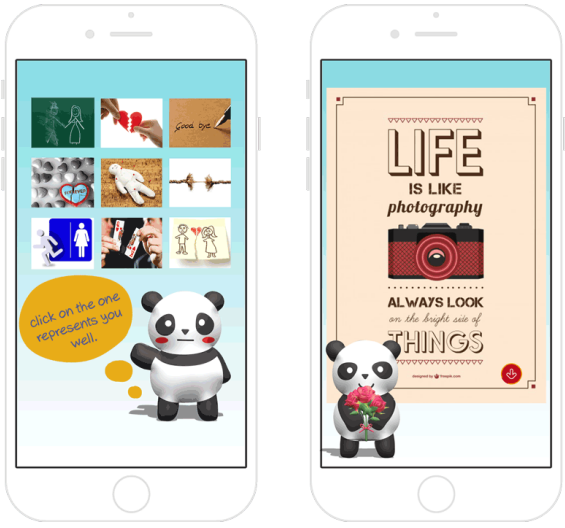
Clicking on "No" will take the users to the page on which the panda hopes they can talk with him before leave. Then they can type in their responses or question and start a conversation (Figure 2b). However, the conversation is not a common language-based one. It communicates with users by listing nine basic human emotions icons on screen and letting they choose the one matches best. Each icon represents a type of mood and also a filter style. For example, when they choose the last icon which means surprise, they will get a manga style filter (Figure 3). So far this effect is achieved in SNOW, a Korean funny selfie app. What people care most are themselves, this function is to amuse the depressive users and surprise them with a little "trick". This is another way to utilize gamification concept into MHapp design, impressing the users with a funny experience.

Text-Image

(a) Emotion Icons (b) Manga Effect

Figure 3: Funny Selfie Camera

Besides above-mentioned answer to "No", there is another way when users give a negative response. It is a combination of text and images, which means when they tell the panda about their worries, instead of showing the users the emotion icons, he will show them nine pictures which may represent nine kinds of different conditions depending on their problem (Figure 4). Choosing the one that describes their mood best will lead them to a downloadable poster with an uplifting sentence on it. Furthermore, the poster can be saved in their phones and even set as wallpaper so that whenever the user is using phone, he or she will be encouraged. This process is easy and fast, like searching for an answer from a "Magic 8 ball" or opening a fortunate cookie, you won't know what you will get until the last second.



(a) Choices (b) Poster

Figure 4: Uplifting Posters

Method

Functions achieved in Hap App are mainly concentrated on three aspects. First, the prototype of the app idea was designed in Adobe Photoshop and Illustrator. It is easy to add or remove some parts and adjust details like position or size in these software. Also, simple interactive effects can be achieved within PS too. By using the slice tools, we can corp the interface into several pieces and export them into HTML pages. I also made use of the Time-line to create some gif animations. Second, the 3D virtual character was designed in iClone, an easy use 3D modeling software. Later, I will try to fully animate the panda and make him more unique and vivid. Not like Maya or 3D Max, iClone is easier to operate and to learn, it offers us several mock-ups so that largely reduce workload. Third, in order to make the app more interesting, multimedia elements were incorporated into Hap App, such as music player and online web games. Actually, the game idea came from the term"gamification"", which was originally coined in 2008, and later broadly used within technology and health realms in early 2010 [4]. Using gamification in mobile mental health apps is a popular strategy to motivate individual behaviors. Game-like rewards and incentives, paired with desired behaviors can help users sustain habits over time.

Pros and Cons

MHapps continue to evolve and the number of them has grown exponentially in recent years due to the extensive global networks. Some of these are aimed at healthcare professionals but the majority are targeted at the general public [2]. Compared with other nonprofessional MHapps, Hap App has its pros that can be continued and its cons that should be improved. Most MHapps tend to focus on physical activity tracking, they collect data on users' day-to-day activities and make use of both the sensor data and users' self-report statics [10]. These apps also include a diary function, appointment and medication reminders. Similar to them, Hap App also has the self-tracking part, which can help the depressive users track their daily mood. The data to some extent, can play a role in professional treatment. What makes Hap App unique is its diversity and comprehensiveness, it takes advantages of all kinds of media and makes itself more than an app. Hap App satisfies the users' need of communication, entertainment and relief. Meanwhile, too many functions to some degree may reduce its concentration in one aspect, making it more like a "multi-area" app rather than a mental health app. Hap App also lacks the motivational prompts which can remind and encourage the users to use it actively. As such, more participants and more detailed assessment are needed to help improve Hap App's accessibility, convenience and performance.

CONCLUSION

Despite the rapid development and increase of healthcare apps, there is a growing demand for the design, development and evaluation of evidence-based MHapps, especially those understands and explores users' needs. As a survey among adolescents indicates, young people are more likely

to use MHapps than older people. In the report, they highlighted the importance of privacy and confidentiality. They thought apps should be password protected and can be chosen whether anonymous [3]. Adolescents also expressed a desire to use MHapps to interact with peers since loneliness is an obvious problem for people in depression. Hap App is designed to help depressive users find a way to release their pressure, cheer themselves up and have fun. It creates a 3D virtual friend and tries to build a solid friendship with depressive users. Users can create their own accounts and use passwords to keep private.

For future work there is still a long way to go. First, users' needs should always be thought of and satisfied. As mentioned above, there may be an age-related difference in take-up so that adjustments should be made according to different age groups. To make it personalized, some functions or interface can be customizable, such as its overall color and graphics. Second, Hap App should be able to offer more professional help and create an interactive social network in the long run. Users of Hap App are also depressive patients who have problems with mental health, tangible improvements in their mental conditions are the best results of using this app. No matter young or old, people need accompany and interact with others. By incorporating functions like communication or sharing into our app, depressive people can talk about their problems and seek help in a community, which can provides the users with a sense of belonging.

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