

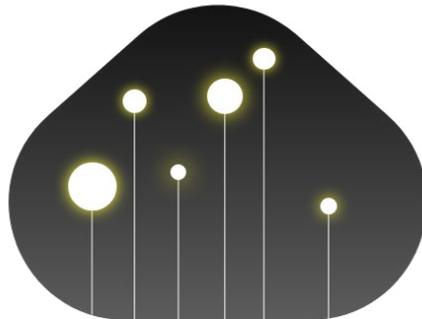


## MBDESIGN

Master's Degree in Advanced Studies in Design  
Barcelona

### LIGHT UP

For young people aged 15-19 who need mental health therapy or support, create an online space that suits them using online cooperation and gamification.



I dedicate this work to my two particularly important partners, Jiaxuan Wu & Xinye Yang, and my sister, who is suffering from depression. Thanks to my tutors who helped me a lot in the process, professor Enric Trullós and the professor Josep Maria Monguet.

## Abstract

With the development of Internet technology, digital health has been actively developed. It is particularly prominent in young people's mental health because the digital natives are a generation that grows up with the Internet. Online psychotherapy is still in the development stage, where is no clear standard and age limit in the market, but there are also plenty of opportunities.

This project looks at the future and believes the digital health APP will focus more on specific ages and mental illnesses. In this context, First, we choose 15-19 years old people as the potential user group of this project because they are in a particular period of cognitive plasticity and deserve more attention. Then we chose online cooperation games as a way to design because gamification design is compatible with CBT(Cognitive Behavioral Therapy), and online cooperation can give users a sense of electronic intimacy. Based on these two points, we have designed a supplementary APP for young people aged 15-19, so that they can use it when they deal with mental health problems. This APP is not to replace the role of psychotherapy doctors but as an auxiliary service to help them reduce their loneliness during therapy, increase their sense of normality, and provide more positive information exchanges. We call it LIGHT UP.

## Keywords

Online Cooperation | Gamification | CBT | Young People | Mental Health | Loneliness | Sense of Normality | Health Design

# 摘要

数字健康随着互联网技术的更新而得到了大力发展。在年轻人的心理健康领域尤为凸显，因为千禧年一代是与互联网共同成长的一代。线上心理治疗还在发展的阶段，市场上没有明确的规范以及年龄限定，也充满机遇。

该项目放眼于未来，认为在未来数字健康应用会更专注于特定的年龄以及心理疾病。在此背景下，我们选择15-19岁的年轻人作为该项目的潜在客户群，因为其处于一个特殊的认知可塑性时期，值得更多的关注。并使用在线合作游戏这样一种方式，因为游戏化设计能够与CBT兼容，而线上合作可以赋予用户电子亲密感。基于这两点，我们设计了一个针对15-19岁年轻人，让他们在进行焦虑心理治疗时能够使用的辅助APP。该APP并非替代传统治疗中医生角色而是作为辅助服务，帮助他们减少治疗时的孤独感，增加他们的正常感并给予更多的正面信息交流。我们称它为LIGHT UP。

# Contents

1. Introduction	5
2. Theory	5
- Theoretical Framework	7
- Online Group : E-ntimacy	8
- Online Support : Information and Emotion	10
- Online Users : Adolescent Cognition	13
- Online Space : Loneliness, Normality and Positive Information	15
3. Process of design	17
- Case study	17
- Gamification and CBT	19
- The Process	21
- WALK ME	24
- WRITE ME	26
- HEAR ME	28
4. The Product : Light Up	30
- Design APP	30
- Welcome Page	31
- Basic Page	32
- Emotion Page - Collective	33
- Emotion Page - Individual	34
- Reality Page - Collective	35
- Reality Page - Individual	36
- Relation Page - Collective	37
- Relation Page - Individual	38
- Thought Page - Collective	39
- Thought Page - Individual	40
- Active Page - Collective	41
- Active Page - Individual	42
- Attend Page - Collective	43
- Attend Page - Individual	44
- Accessibility Page - Collection,Health and Profile	45
- WALK ME Page	46
- WRITE ME Page	48
- HEAR ME Page	50
5. Conclusions	52
6. Bibliography	54
7. Annex	56

# Introduction

From the 1990s to 2017s, the world population density increased from 816 to 1265, but 15-19 young people's estimates of anxiety disorder prevalence based on medical keep falling in the area between 4.35% to 4.37%(GBD, 2018). This age group is called sub-puberty, and it is also the developmental period of the prefrontal cortex. At this time, young people's cognition is malleable( Galván, 2014 ). Therefore it deserves more attention. Nowadays, Using online therapy to do psychotherapy for mental health problems is proven to be an effective method for digital natives (Cook & Doyle, 2002; Kaucer, Mangan & Sancic, 2014). The Deloitte company wrote a report about digital health technology: "Health information and digital technologies are helping to create the necessary foundation for the future of health. "(Allen, Perlman & Elsner, 2019)

Taking into account these circumstances, this project aims to provide a new idea for the auxiliary design part of online therapy for young people in the future. Our purpose is to understand how young people seek online support besides online psychotherapy. Moreover, design an APP for 15-19 young people who can use it as an auxiliary part of online therapy to reduce the loneliness during treatment and increase their sense of normality and give more positive information.

Hypothesis: For young people aged 15-19 who need psychological therapy or help, if we can provide an online space that can reduce loneliness, enhance normality, and increase positive information exchange. Then they can seek support from peers and help each other in this space.

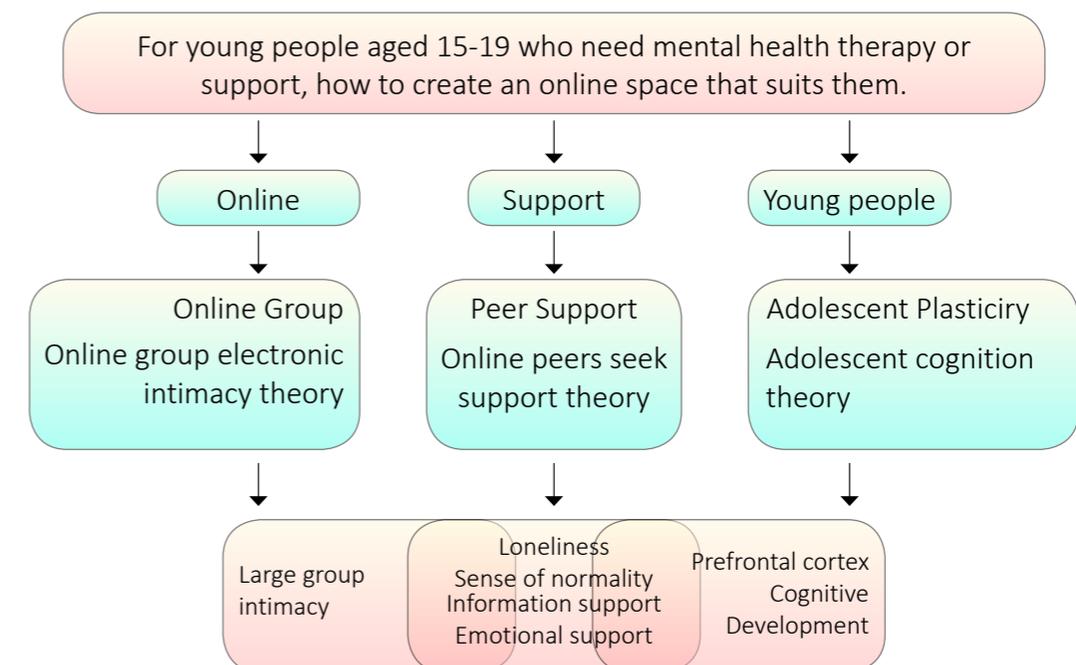
I divided this project into research and design stages: In the research stage, the first phase is to understand the group relationship of online group therapy. The second phase is based on the search method, which is defined personally for 80 APPs that can help young people with anxiety in apple or google stores. Then i evaluated the 20 selected APPs. The third phase is focused on the most effective APP KOOTH from the second phase. In the last phase, study the cognitive characteristics of 15-19 young people.

In the design stage, I invited a master student of applied psychology, and a master student of music applied psychology to design this APP together. Furthermore, we keep communicating and consulting with two potential users (19 years old, female, severe depression, and 15 years old, female, no severe mental illness).

# Theory

## Theoretical Framework

The theoretical framework of this research is based on the interdisciplinary research (IDR) theoretical framework and refers to the IDR model proposed by Cohen Miller and Pate (Cohen Miller & Pate, 2019). Initially, my area of interest was how to help young people with mental health through online technology. In the preliminary study, I gradually narrowed the problem and defined it as how to create an online space that suits them. And based on the literature references related to the problem, it is subdivided into three concepts: online, support, and young people, thus confirming the perspective of interdisciplinary subjects. In the next step, using these three concepts as a guide, the disciplines associated with solving the problems raised are determined: online group, peer support, and adolescent plasticity. Then, based on these three disciplines, determine the theory that is suitable for solving my problem. Finally, I extracted the keywords in interdisciplinary as shared information and formed my theoretical framework.



## Online Group : E-ntimacy

Online cooperation is a group cooperation behavior that occurs on the Internet. Besides, this project is essentially using the relationship of groups to influence individuals with the help of technology. Based on the previous two points, we should first describe the definition of online group cooperation and then analyze what conditions of online group relationships can help individuals.

The definition of group cooperation has different meanings in different comprehension expressions. This paper draws on the concept of group in the bibliography of group psychotherapy. By this concept, the concept of group cooperation is: through group activities facilitating the interaction of multiple group members with the same problems or needs (Liu, 2015).

After defining group cooperation, we chose to use intimacy to describe the relationship of groups and focus on understanding the group relationship in psychotherapy. "Intimacy is commonly related to concepts such as love, closeness, self-disclosure, support, bonding, attachment, and sexuality " (Weinberg & Rolnick, 2020, 174). In real life, offline group therapy defaults to be the behaviors that occur under conditions of physical contact. However, the online group therapy makes this physical condition disappear, which defaults to be the behavior in the condition of no contact with the other members and no face to face. We called it e-ntimacy. According to the research of WEINBERG and SCHNEIDER, good e-ntimacy of group therapy will make people and their peers feel that they exist in the same large group. This e-ntimacy is more based on a sense of identity and belonging.

KOOTH is an online consultation service for young people who belong to 11-25 and encounter emotional and mental health problems. KOOTH is mainly divided into two parts, online consultation with doctor participation and an online forum with no professionals. For the part of KOOTH without therapist participation-the online forum is described: Online forum is indispensable and fills another vacancy of online therapy and the reason is a large number of young people look for and get support in this part (Prescott, Hanley & Ujhelyi, 2017; Prescott, Hanley & Ujhelyi, 2019).

The purpose of this project is an auxiliary online Therapy APP for 15-19 years old. So I summarized three aspects from the literature related to the KOOTH online forum: loneliness and normality, youth cognition, positive information exchange. Then I combined evidence and insights with young people to analyze under what conditions that online groups can help young people.

## Online Peer Support : Emotion and Information

The KOOTH online forum provides a place for young people to seek and obtain support from peers online, a supplement to online therapy. Because online peer support has the following advantages :

1. Provide a sense of normalcy for young people (Prescott, Hanley & Ujhelyi, 2017; Prescott, Hanley & Ujhelyi, 2019)  
Get the feeling of being treated equally. For young people who encountered misunderstandings in offline life, peer support of the same experience will normalize their personal experience.

2.Reduce loneliness (Prescott, Hanley & Ujhelyi, 2017; Prescott, Hanley & Ujhelyi, 2019)  
Find peers who have similar personal experiences. Young people may feel embarrassed face-to-face discussing their problems. And in underdeveloped areas, it is hard to seek peers with the same experience. Online support is such a channel that narrows the geographical distance and obtains an empathetic response.

Normality and loneliness are a set of interrelated influences (Prescott, Hanley & Ujhelyi, 2017; Prescott, Hanley & Ujhelyi, 2019), and they are also essential requirements for young people's online support. Qianyu, one of my interviewees, supported this point :

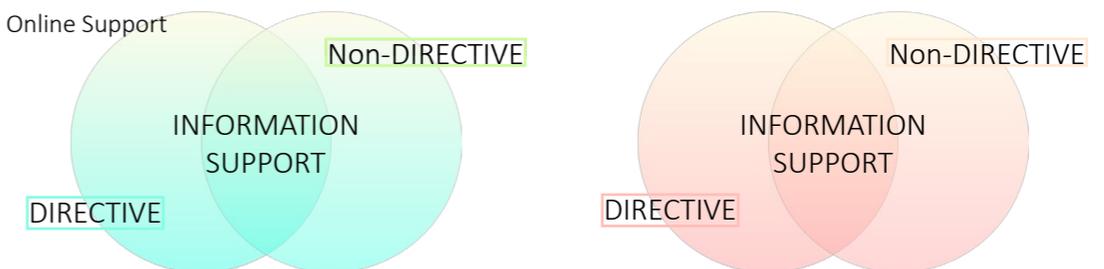
I tried to ask for help from the people around me, but they couldn't understand my pain. Every time I thought I needed to explain a lot to them, I would resist. I prefer to seek people who have the same experience on the Internet and express my troubles to them. This way, I feel that I can be understood, and I can find a peer who is as depressed as me.

3. Learn new information (Prescott, Hanley & Ujhelyi, 2019)  
Be able to learn how peers face similar psychological challenges.

4.Encouraging (Prescott, Hanley & Ujhelyi, 2019)  
Getting support from peers can encourage users to seek professional help earlier.

After understanding the advantages of peer support provided by the KOOTH online forum, I will explain the type of peer support. According to the research ( Prescott, Hanley & Ujhelyi, 2017 ), the peer's support is divided into four types (Dia 1) :

Diagram 1 , Online Support



Directive emotion support :

Directive emotion support exists in replies to posters. Usually, replies provide peers' solutions by sharing similar experiences, providing specific advice and suggestions, and emphasizing how these methods help themselves.

Non-directive emotion support :

Non-directive emotion support refers to young people talking about their experiences with non-directional sharing. Such information can gain empathy or a discussion of the same experience from peers.

Directive information support :

Directive information support exists in the responses to other posters. They will not talk about their own experiences but directly provide the institutions, doctors, and even their friends for the posters.

Non-directive information support :

Unlike non-directive emotion support, the posters will provide more reference information and describe his own experience, including their personal information and the institutions and doctors. They will give detailed descriptions instead of merely explaining situations.

The role of these two kinds of information support: for the poster, they will get more targeted positive information. For the responders, they will get the reference of positive information. Positive information is more indicative information, including the organization's phone or the solution to the problem that the other peers may need.

## Online Users : Adolescent Cognition

The World Health Organization stipulates that adolescence is between 10-19 years old. During adolescence, the prefrontal cortex begins to develop and mature until 25 years old. Specifically, the prefrontal cortex involves high-level planning cognitive activities, personality performance, decision-making, regulation of social activities, and specific aspects of language functions( Yang, Raine, 2009; Gabrieli, Poldrack & Desmond, 1998 ). Because at this stage, the prefrontal cortex is developing, adolescents will exhibit immature behavior( Arian et al. 2013 ). Furthermore, they are susceptible to negative effects, but it also makes adolescence be the ideal time for positive influence and redirects problem behavior ( Galván, 2014 ).

I surveyed KOOTH's top 100 latest forum themes and found that 46% of the posts straightly shared negative emotions. KOOTH defines the age of forum users as 8-21 years old, but this generation includes different periods of mental development. It was mentioned that due to the lack of supervision on the forum's content, it is temporarily unclear whether negative emotion posts will affect young people (Prescott, Hanley & Ujhelyi, 2019).

In addition to scientific research, the opinions of potential users and professionals have also shown the importance of information selection for adolescence. Qianyu exemplifies this point when she describes why she is willing to play games to relax while suffering from depression :

I know that my depression is difficult to rely on people other than professionals to get help. However, I will choose a better environment to express my opinions or socialize with more optimistic online dating circles. This is why I prefer to play online games FF14 [1].

Yang, a graduate student in public music psychology, in an interview with our first App demo, said:

In the 15-19 years old age group, we define it as sub-adolescence. This period should pay more attention to the input of positive information; any sentence with negative information may cause terrible guidance to young people.

[1]FF14 :Final Fantasy 14, a Japanese-style MMORPG online game. It is famous for its very friendly player environment.

## Online Space : Loneliness, Normality and Positive Information

After analyzing how young people get online support and adolescents' cognitive characteristics, we can conclude that the need for young people who seek mental health help is a space that can accept themselves expect therapy needs. Compared with similar offline space: campus consulting institutions, campus consulting institutions need to increase human resources to meet students' increasing needs. But the situation is students meet the needs of providers. Economic restrictions have also led to restrictions on consulting services. Due to these two conditions, the offline space for young people to seek support is slowly developing( Mowbray et al. 2006 ). In this reality, a better way is to shift the development dimension to the Internet. Online technology can enable such communities to develop in a more effective way than offline space ( Prescott, Hanley & Ujhelyi, 2019 ).

The book Teen Mental Health in an Online World commented on Internet shaping space for young people, "The internet can be a space where young people build their sense of self-efficacy through engaging in creative production and civic activities" (Teen Mental Health in an Online World, 2018, 257) and believe that digital tools can promote and improve services to achieve organizational forms that transcend current boundaries.

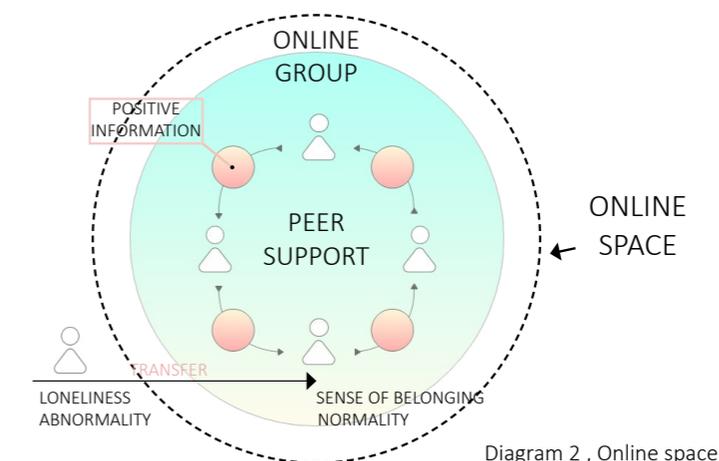


Diagram 2 , Online space

For young people aged 15-19, if they need psychological help and seek the support of their peers online. To create an online space that can fit and help their individual, two conditions need to be met (Dia 2): First, it can reduce the loneliness of young people who lack understanding from other offline people and enhance their normalization. The critical point is to understand the characteristics of online group intimacy and then find a way to connect them. The second is to provide them with more positive information exchange. As mentioned above, the characteristics of adolescent cognitive sensitivity, we need to understand the type of support that young people are looking for and provide positive support as much as possible with limiting negative information.

# Process of design

## Case Study

Based on the previous research, we will first look for a similar MENTAL HEALTH APP for analysis. Then, based on the theoretical framework of CBT, gamification is carried out to generate a design framework suitable for this project. At the lat, the design plan is produced.

I use young, mental, anxiety, CBT as keywords to search in AppStore and GooglePlay. Then download almost 60 apps. Secondary, i excluded apps without an official website or at least recommended by psychologists Because these apps are more like demo production. At last, i have 20 apps to make a horizontal comparison(Annex 1).

As the results show, the two areas of online collaboration and gamification have not been widely used in MENTAL HEALTH APPs. It can be seen that cooperation and gamification are still in the innovative field of online therapy. Next, we will introduce cases in these two fields.

### Online cooperation

The first one: Headspace online collaboration uses an online meditation room. When you enter this space, you will find other players using virtual avatars. And invite and encourage you to meditate with the online users inside.



Figure 1 , Screenshot Headspace. Headspace. Version 4.4.1



Figure 2 , Screenshot Stem4 .Combined minds. Version 1.0.1

The second one: CombineMinds is an APP that encourages family use. Family members can work together on it. Members can see what the other party is upset about recently, and understand what activities the other party is more willing to use to relieve anxiety.

Then family members can publish activities together to complete.

Online cooperation can create gathering places regardless of geographical distance, promote user participation, and have the potential to increase treatment willingness.

### Gamification

The first one: Antistress random 24 mini-games for you to PLAY. The game is mainly repetitive and simple.

The second one: SKILLS is a combination of thirteen small games, designed with psychologists to help them focus on their current thinking.

Gamification can be designed in conjunction with psychological ideas. For example, it can be combined with CBT therapy but still maintain the characteristics of the game.

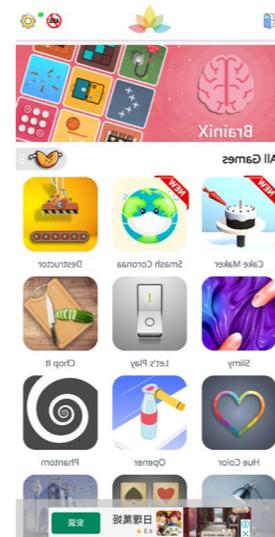


Figure 3 , Screenshot Content Arcade Games. Antistress. Version 8.26



Figure 4 , Screenshot Vacay GmbH.SKILLS. Version 1.0.91

### Gamification and CBT

CBT means Cognitive behavioral therapy. CBT is recommended as the first line of treatment for most psychological disorders in children and adolescents, including aggression and conduct disorder(Benjamin et al. 2011).

CBT is based on combining the basic principles of behavioral and cognitive psychology (Beck, 2011). CBT is a "problem-focused" and "action-oriented" form of therapy, meaning it is used to treat specific problems related to a diagnosed mental disorder.

According to Judith S. Beck (Beck, 2011), CBT treatment is divided into five steps:

1. Develop therapeutic relationships
2. Formulate treatment plan and meeting structure
3. Identify and respond to positive cognition
4. Highlight positive aspects
5. Homework

Gamification CBT is on the treatment principles of CBT to design games. In game design, the game needs to draft game documents. A game document is a detailed description of the results of the player's selection of each step of the game through text. This one-to-one correspondence has the same characteristics as CBT. CBT is to respond to the therapist's every step of the answer to help the patient find the core negative beliefs to revise (Beck, 2011), and many treatments can be broken down into series of tasks, skills, and learning points (Christie et al. 2019).

On the other hand, due to the game's pre-design, we can fully grasp the game content so that it can express positive information as much as possible.

Based on the above two points, gamification CBT mainly includes the following steps(Dia 3):

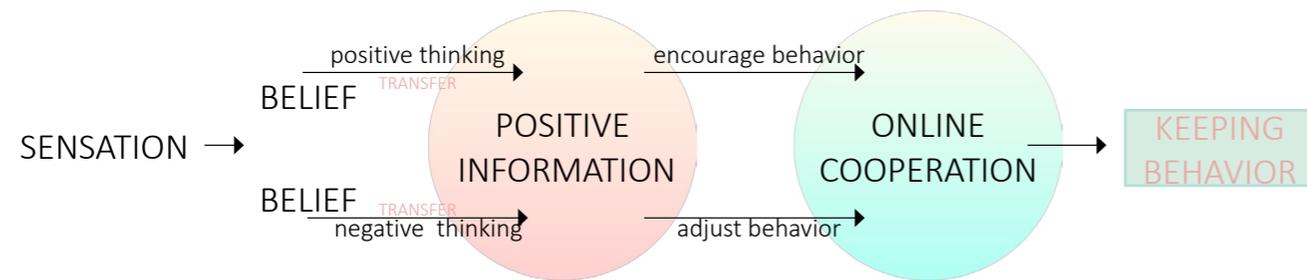


Diagram 3 , gamification CBT

## The Process

After studying the literature and actual cases, the author invited a graduate student in applied psychology and a graduate student in public music psychology to join the design team. Due to the epidemic, the entire process uses remote meetings. The design team first decided the theme of games and then discussed the specific design content and which appropriate language to use. The shortcoming of this project is that it did not use an actual demo to conduct user testing, so getting the support of psychologists and understand potential users becomes the key.

The APP is mainly divided into two parts. In the first part, the design team reduces the loneliness of young people through collective construction. As mentioned in the previous article, when group therapy switched to online, the group intimacy maintained is similar to that of a large group. From Harari's point of view (Harari, 2011), the existence of large groups is based on collective imagination, which allows people who do not know each other to cooperate with and build trust. Here, the design team used FRIDAY GROUP for reference to a dynamic model used to test and show members to establish online forums(Weinberg & Rolnick, 2020)

The design team will use this structure as the carrying method of collective construction cooperation to express and demonstrate the dynamic collective construction of young people. First of all, the team defines that the APP used by young people is a virtual planet. Their behavior on this APP will have a particular impact on the entire virtual planet. Therefore, they will work with other online users to build this virtual planet. Their influence will be shown by these six items.

ATTEND. Individual: Mark the online status of an individual user and present his online record with a calendar presentation. Collective: Display comprehensive online information of all users. The display's content is the number of people who are cooperating, the number of people looking for cooperation, the number of visitors, and the number of people online.

RELATION. Individual: Users who have cooperated will be displayed anonymously. Collective: Express the sense of identity with other people, influencing factors including the degree of user feedback on each cooperation will be given an anonymous star rating (Not shown to users). The higher the score, the more positive the feedback of cooperation is. Then calculate the average value based on the number of users participating in the cooperation.

EMOTION. Individual: Daily mood record, use facial expressions to record each mood, the lowest is 0 points, the highest is 100 points; Collective: Show the overall emotions of users on the entire planet, the influencing factors are the average value of total mood points.

THOUGHT. Individual: Record the cooperation content of individual users. Collective: Show the cooperation content of the entire virtual planet and the topics involved, the main display of emotional and information support area.

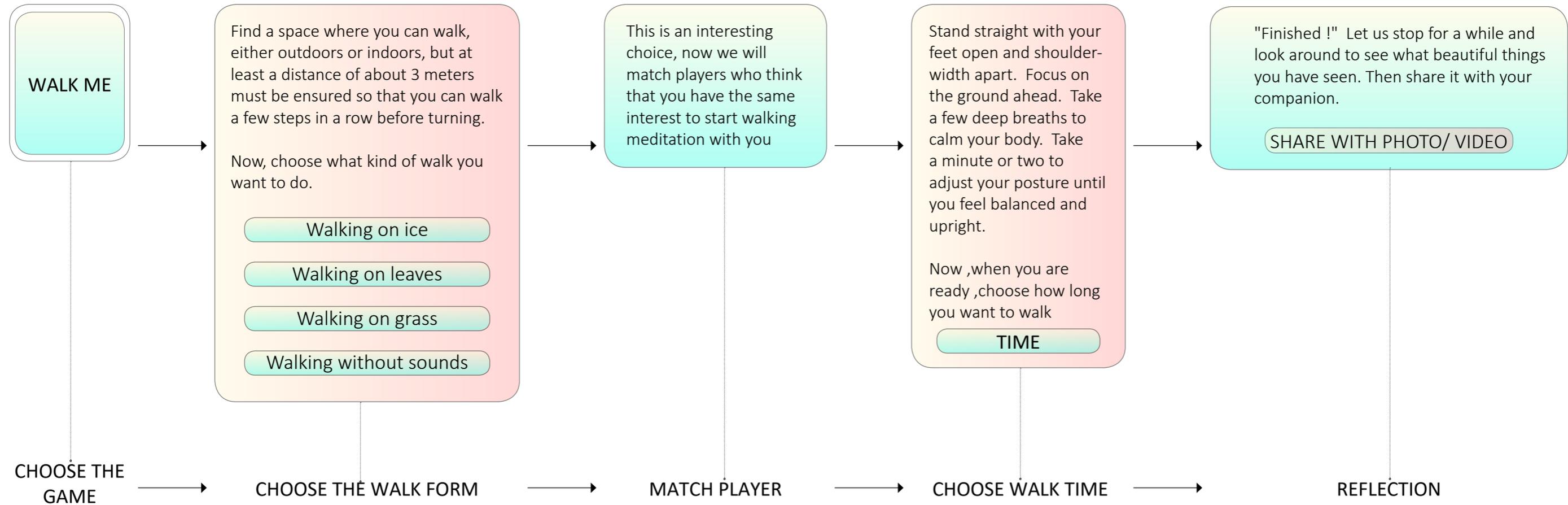
ACTIVE. Individual: Indicates the degree to which this user helps others to encourages peers to help each other and seek cooperation. Collective: The degree of participation from the overall user. Influencing factors include the number of collaborations per user per day, the number of topic discussions that have already participated.

REALITY. Individual: It means the user's app using time, which has monitoring significance for young people. Collective: Excessive online time will affect the health of the virtual planet and encourage young people to participate in activities related to reality.

In the second part, the team designs a platform for young people to support each other through online cooperation, and provide them with as positive feedback as possible through the design of games. First of all, we will determine the theme. The theme is classified according to the topics most interested in young people in the KOOTH forum(Annex 2). Then we chose three themes to design. It should be noted that the primary purpose of this design is to help young people get support from their peers and use CBT to give more positive feedback. The purpose is not to do therapy to young people through CBT.

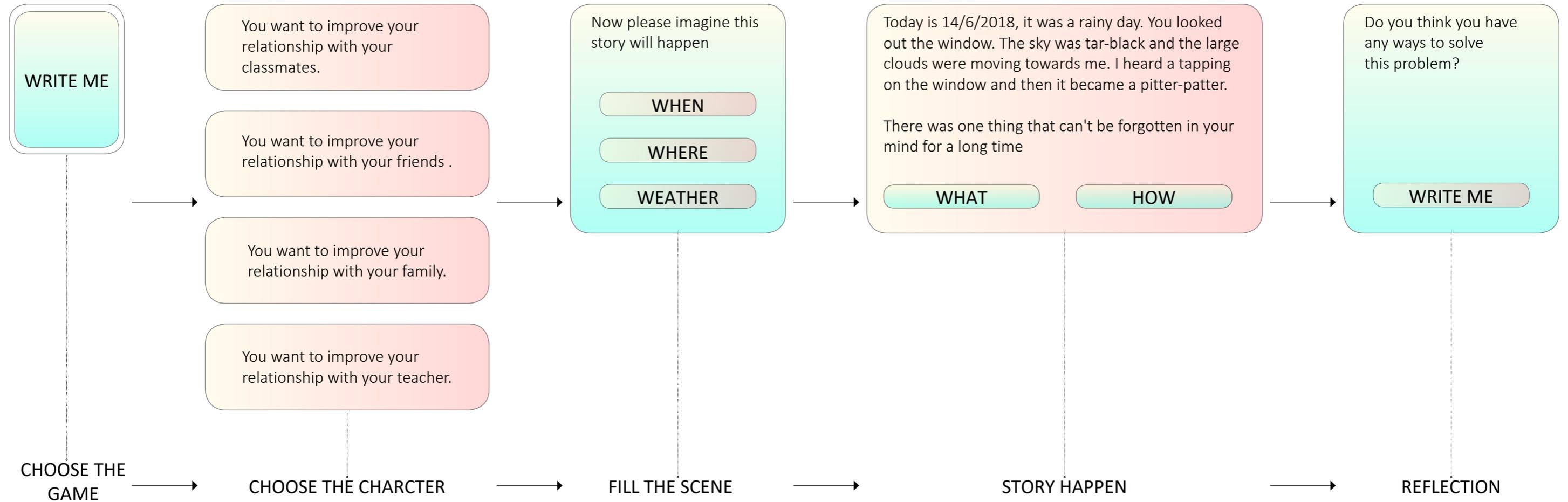
We designed three online cooperative games: WALK ME, WRITE ME, and HEAR ME. We were corresponding to different themes, as well as online cooperative games of different durations and levels. The following will introduce each game.

## WALK ME



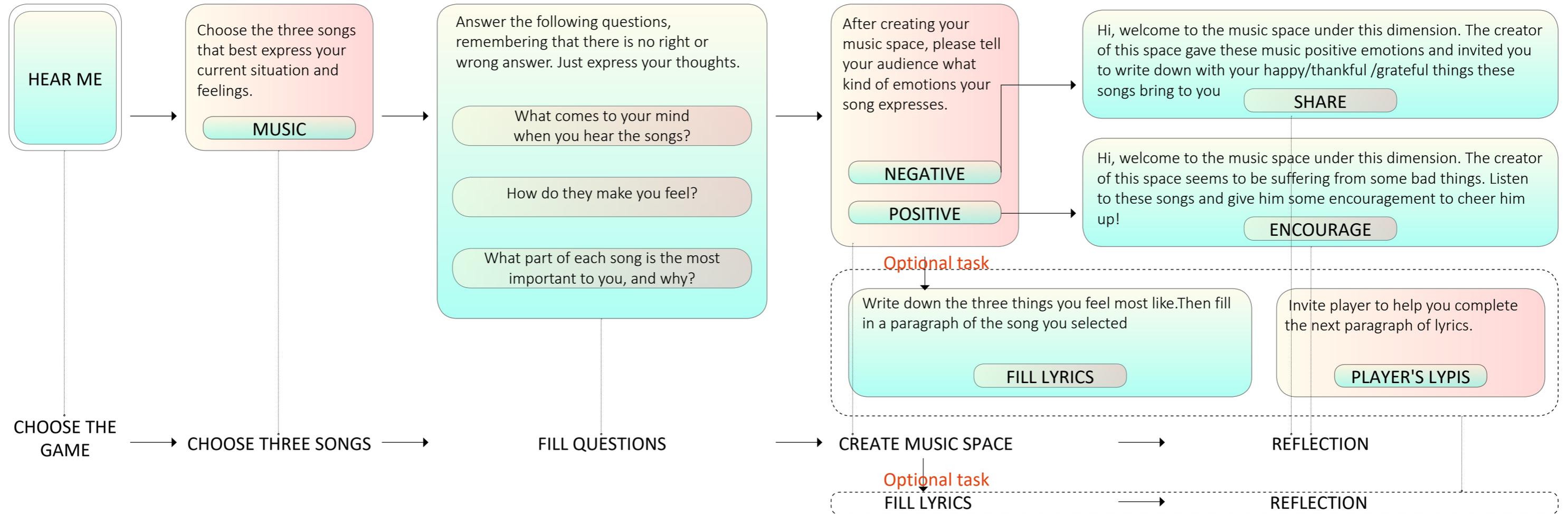
WALK ME is a game designed based on walking meditation. The principle of concentration and mindfulness given by walking meditation is a part of CBT therapy. Moreover, in the case study stage, the survey results show that meditation is the feature with the highest share of the 20 MENTAL HEALTH APPS. Taking into account the user group, the design team did not adopt static meditation but designed cooperative games from walking meditation as an entry point. In the first step, the user chooses from the three cooperation games. The second step is to select the walking form that the user wants to perform. Based on the imagination of walking, users can focus more on walking. The third step is to match the user to play the game with him. In the fourth step, the user chooses the time to walk. In the process, the team envisioned detecting the user's steps while providing walking sounds that match the second step and appropriate meditation sound guidance. In the fifth step, after the end, the group encourages users to look around and think. Then take videos or photos to send to the players who did walking meditating together. When the team interviewed potential users, the team learned that they were eager to use the internet to meet friends from other countries and were curious about places where they still have not been. Therefore, we use the fifth step to encourage and motivate users to practice walking meditation.

## WRITE ME



WRITE ME is a topic based on virtual writing. Users can substitute themselves in the storyline by imagining a role to express their worries better. Then adjust themselves opinions through positive information from other peers. In the first step, the user chooses one of three cooperation games. In the second step, the user chooses the role that he wants to play. Considering 15-19 young people's lifestyles, we choose to provide four role situations, corresponding to classmates, teachers, friends, and family. Use positive semantic text to guide users to think more positively. The third step is to let the user fill in the where, time, and weather of the story he wants. In the fourth step, we combine these three elements to give users a description of the scene and background music matching the weather. And with open-ended questions, open-ended questions can enable users to make more detailed responses to related questions and events, so that they can talk more about situations, ideas, and emotions. (Qian, 2016). In the fifth step, when selecting the "write me" button, their questions will be sent to the players who are willing to help others. The user will get feedback to understand that there are multiple solutions to the problem and also hint to the user that things are better than his/her thoughts. Feedback and the therapist can provide the visitor with particular information about how he or others deal with the visitor's problem. The purpose of applying feedback technology is to help users broaden their horizons and understand how other people think and deal with similar things (Qian, 2016).

## HEAR ME



HEAR ME is based on the topic of music sharing. The analysis of the KOOTH forum topic mentioned in the previous article showed that the music playlist received more replies than other topics. Discussing music is an essential part of the normalization of young people (Prescott, Hanley & Ujhelyi, 2017). Moreover, music and lyrics can promote people to express themselves safely and creatively (Kurtzman, 2019). In the first step, the user chooses from three cooperative games. In the second step, the user fills three songs that they think can express their ideas. No. The third step is to let the user fill in the open questionnaire according to the second step. The fourth step is to create a music space based on the second and third steps, and other users can enter the room to listen to the user's playlist and see the information filled in by the user. Then the user chooses whether the information expressed by the individual is positive or negative. The fifth step is to set other players to give different feedback through different choices of the user. If the user chooses positive, the audience will be invited to express positive information with them. If the user chooses the message, it will tell the audience that the creator is experiencing pain and hope that everyone can apply positive information to cheer up the creator. The sixth step is an optional task. Filling in the lyrics is a more professional psychotherapy method based on sharing music, but it requires users to have writing ability. If the user chooses this task, he fills in the three things he likes most, creates a piece of lyrics, and invites other players to complete the next paragraph. Then both parties can write feedback to each other.

# The product : Light Up

## Design APP

The result of this project is an online APP running on a mobile phone that uses online cooperative games to support young people aged 15-19. This design aims to transform the design conclusions of the previous chapter into visible results and achieve the following goals:

1. Dynamically record the user's overall data, and visualize it according to different data classifications
2. Dynamically record the user's personal data, and according to different data Visual display by classification
3. Fully show the positive information in the process of cooperative games
4. Fully show the positive information in the user's use process
5. Be able to understand the ongoing cooperative game process at any time
6. Give users the authority to score the cooperation they have participated in and review completed and unfinished cooperation at any time.
7. Users can review the cooperation through multiple channels for players who have voted for tasks or cooperated.
8. Users can grasp the overall real-time dynamics and have the right to choose to join or view.

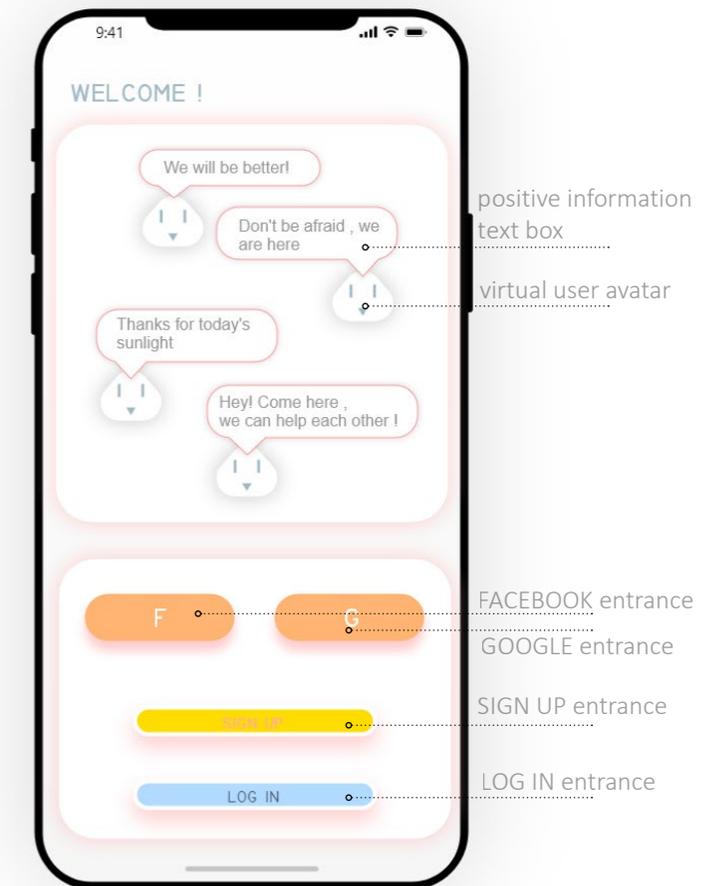
In the next sections, I will explain the main interface step by step.

## Welcome Page

Users open the first interface of the APP, which is divided into two parts.

The first part is located at the bottom of the screen. In addition to the basic registration and login functions, and add interfaces for logging in using FACEBOOK or GOOGLE.

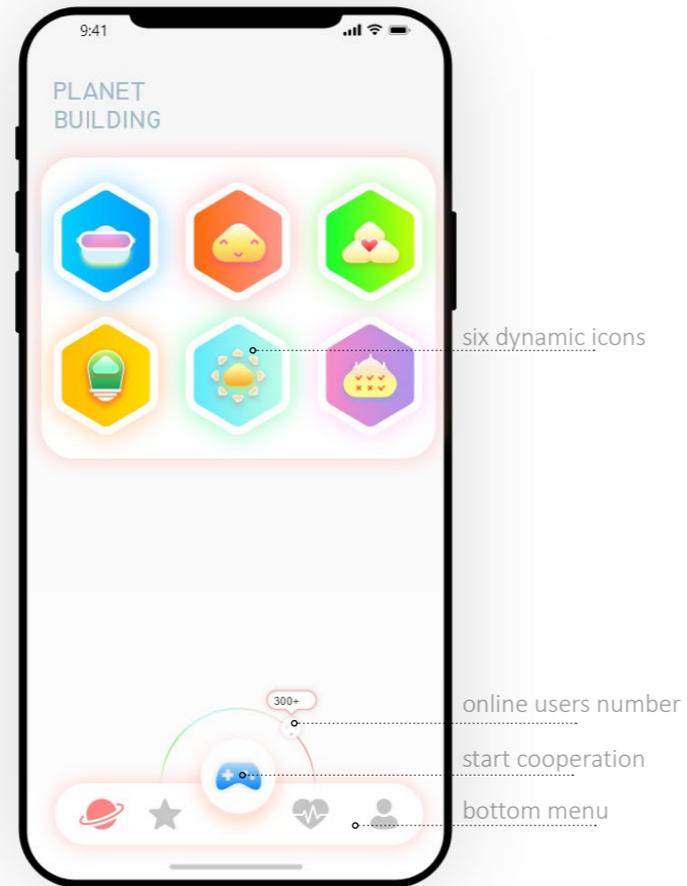
The second part is located at the top of the screen, taking into account the characteristics of the potential user group. Therefore, the user can see the positive information recorded by other users on this interface.



## Basic Page

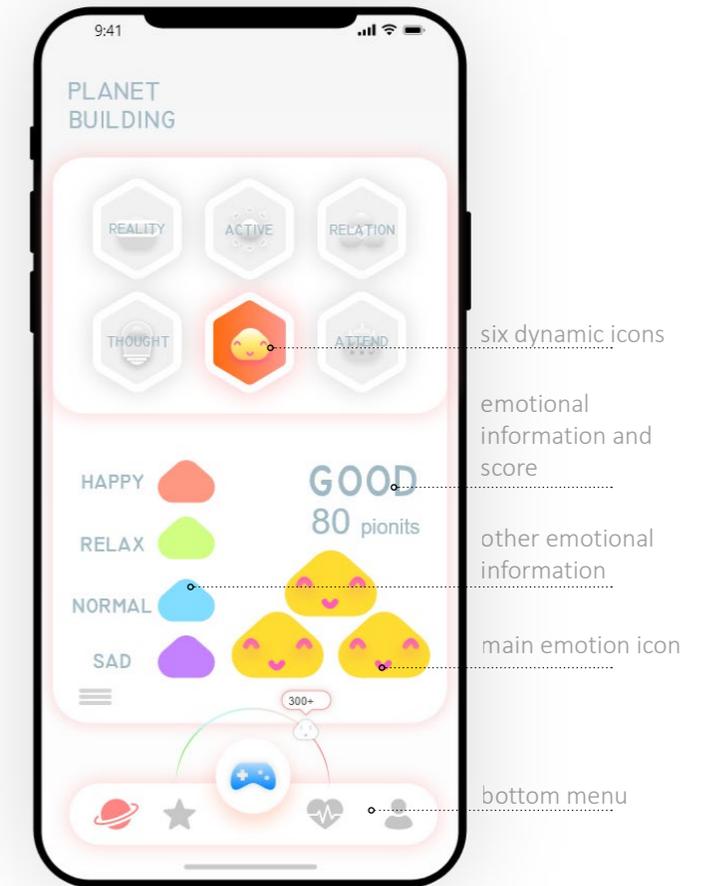
Users can switch by clicking on the six dynamic icons at the top of the screen. Each icon corresponds to a dynamic content.

At the bottom menu, users can directly see the real-time number of people currently cooperating and can enter the process of creating cooperation at any time.



## Emotion Page - Collective

On this page, users can see real-time collective user mood ratings. The primary emotion is the largest ICON, and other emotions will be displayed on the left.



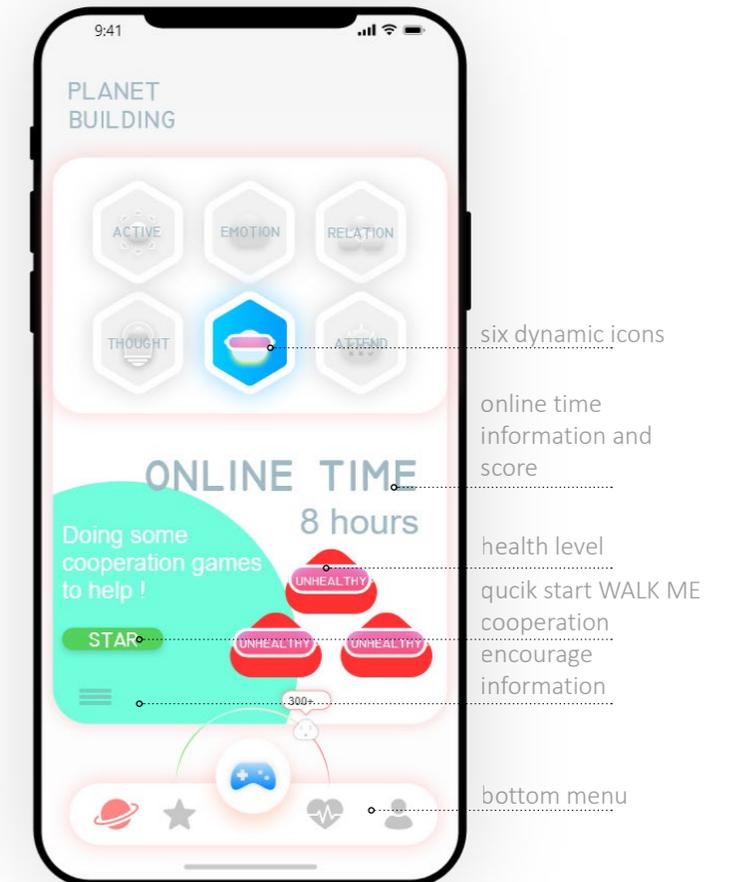
## Emotion Page - Individual

In the emotion-individual page, users have used to record their today's mood points ,the emotion expression will change as the value changes and can view the past mood calendar after saving.



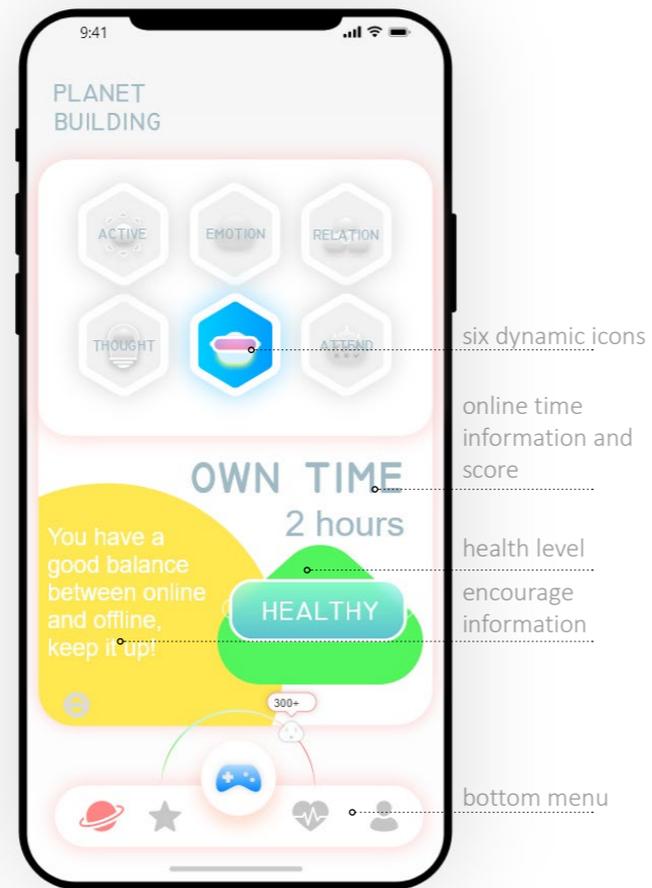
## Reality Page - Collective

In this interface, users can see the average use time of the entire virtual planet. When collective are unhealthy, they can quickly click buttons to perform activities related to reality.



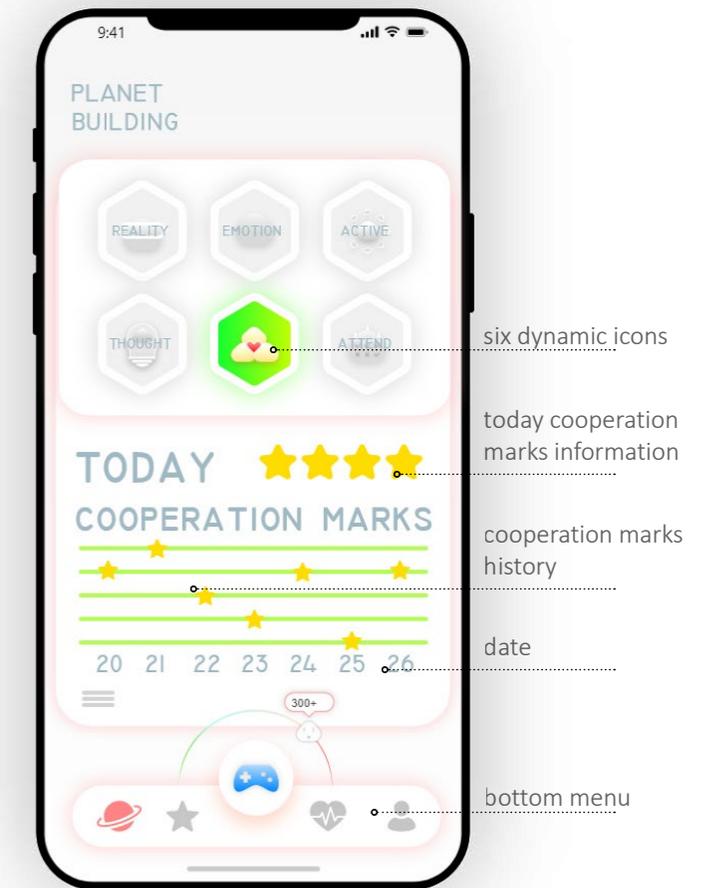
## Reality Page - Individual

Similar to the previous page, except that the actual time is the user's personal use time. When healthy, users are encouraged to keep up.



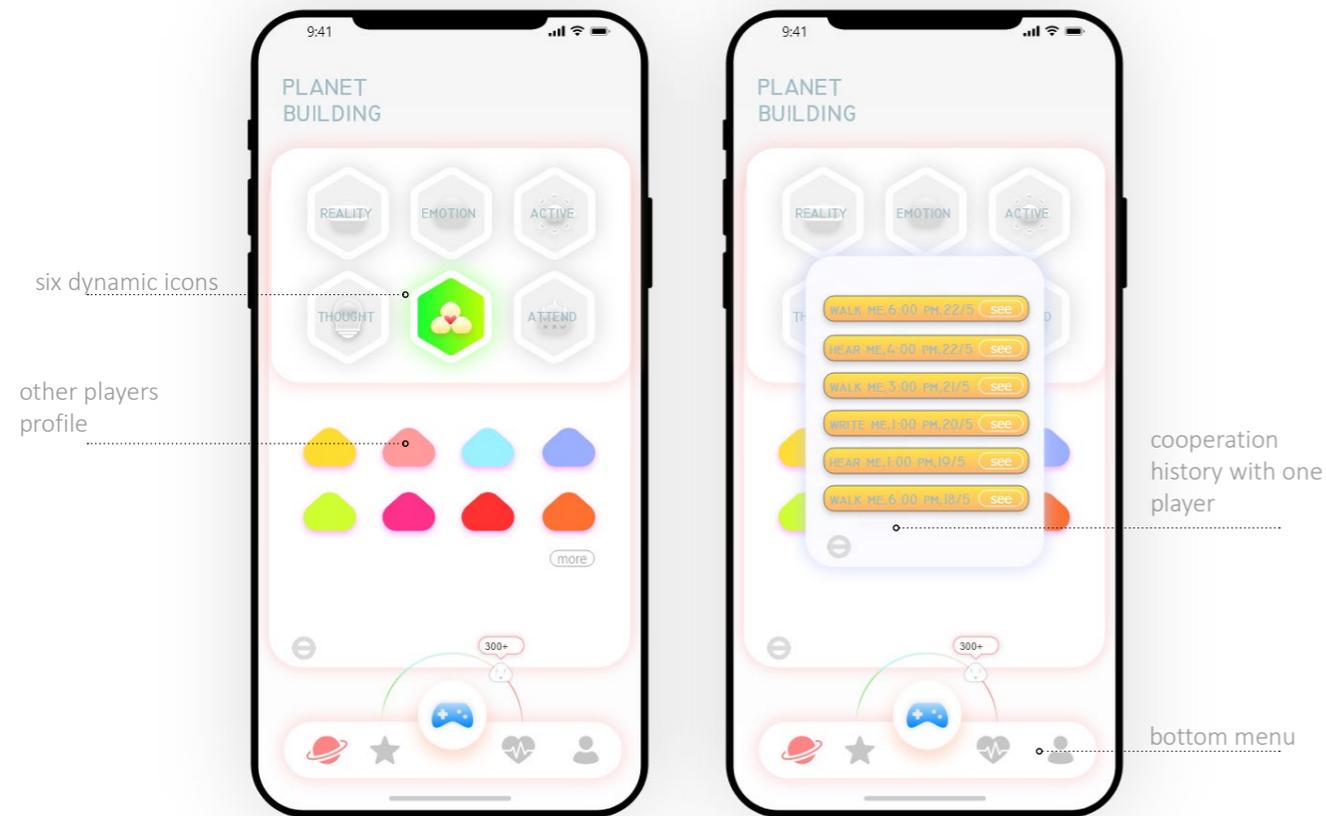
## Relation Page - Collective

On this page, users can intuitively see the star rating of the day's collective cooperation level and view the history of collective cooperation scores for a week.



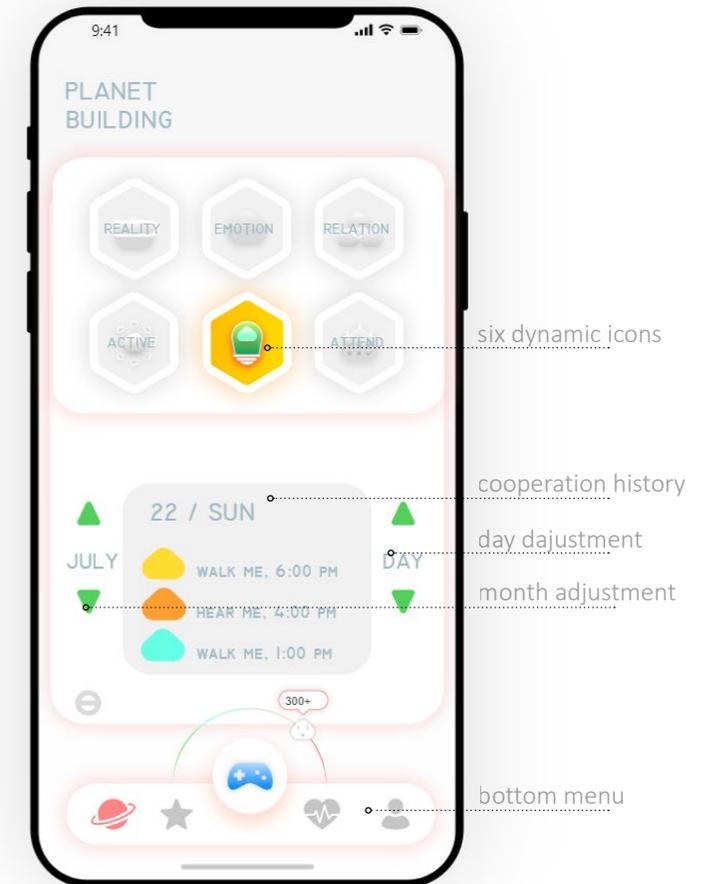
## Relation Page - Individual

Users can view the players who have cooperated in the past, and can check the cooperation history and cooperation details by clicking on the player's avatar.



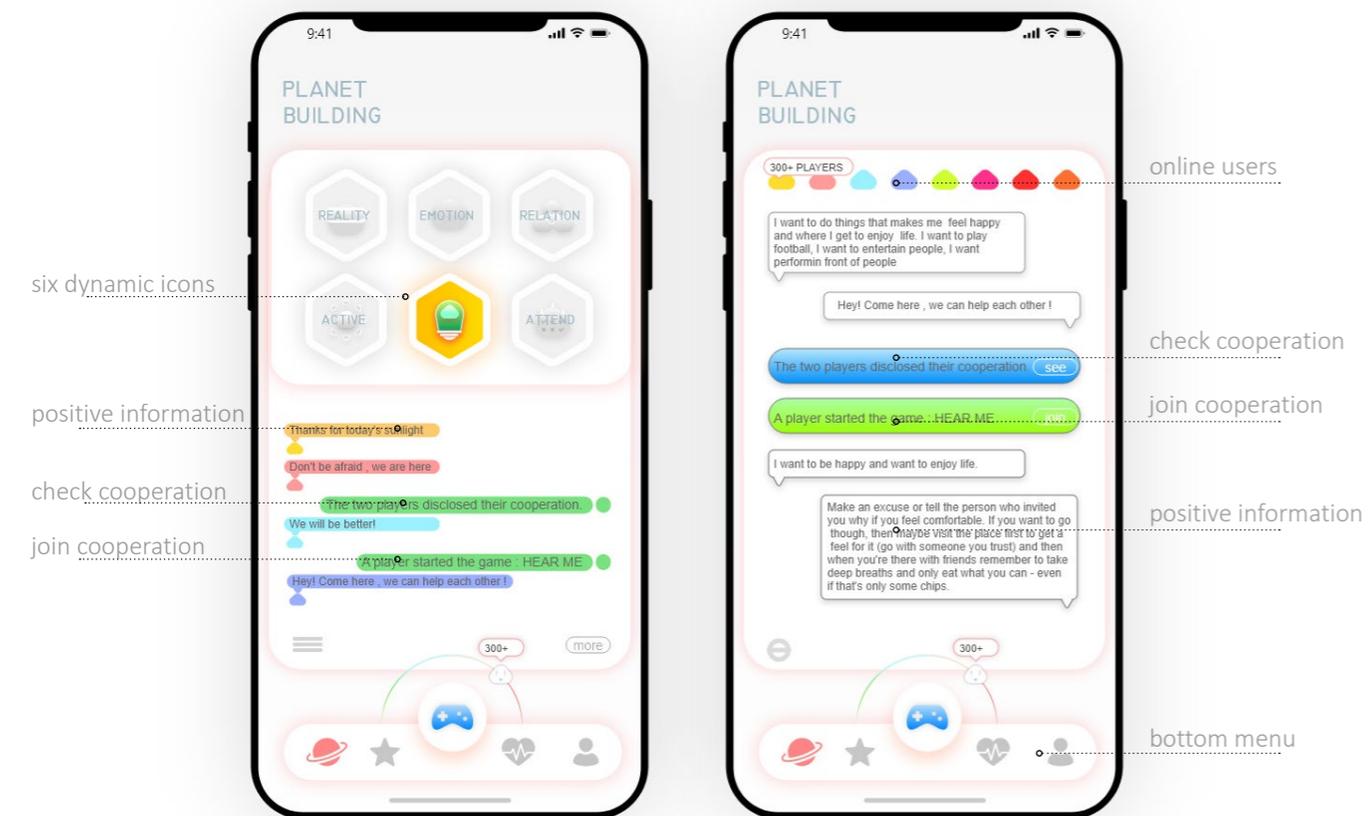
## Thought Page - Collective

Users can view their cooperation history.



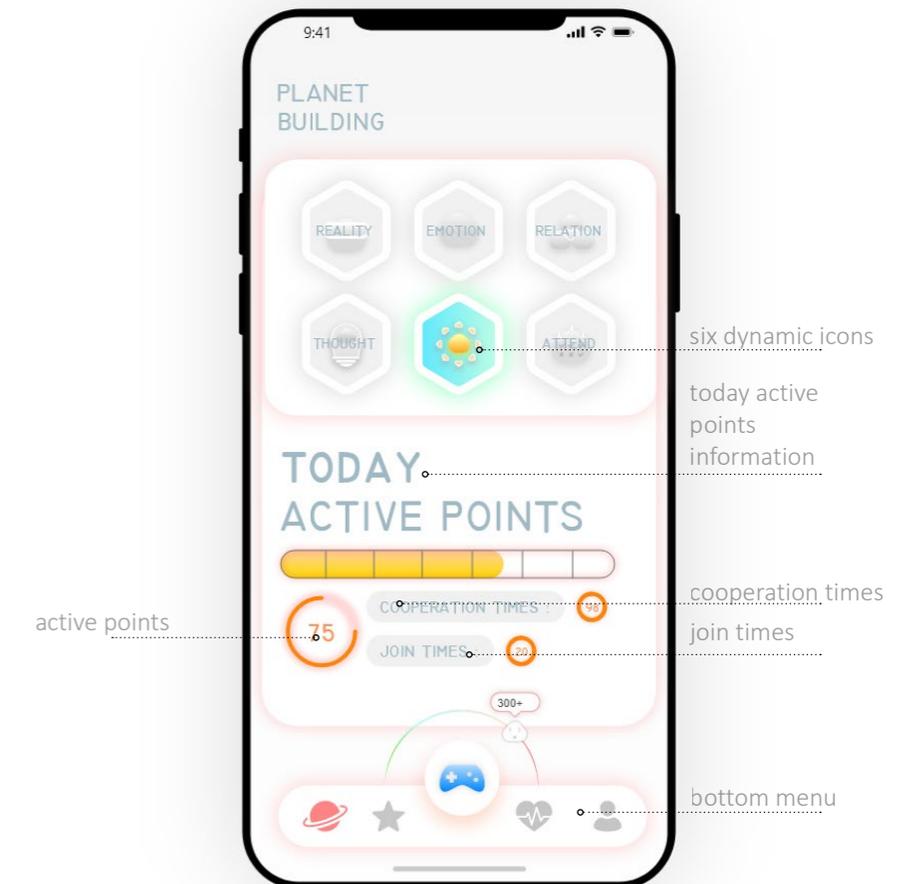
## Thought Page - Individual

On this page, users can see real-time dynamic positive information and cooperative news. Moreover, they can go to a detailed page to view, and users can view other people's open cooperation history in real-time, or join the cooperation opened by others.



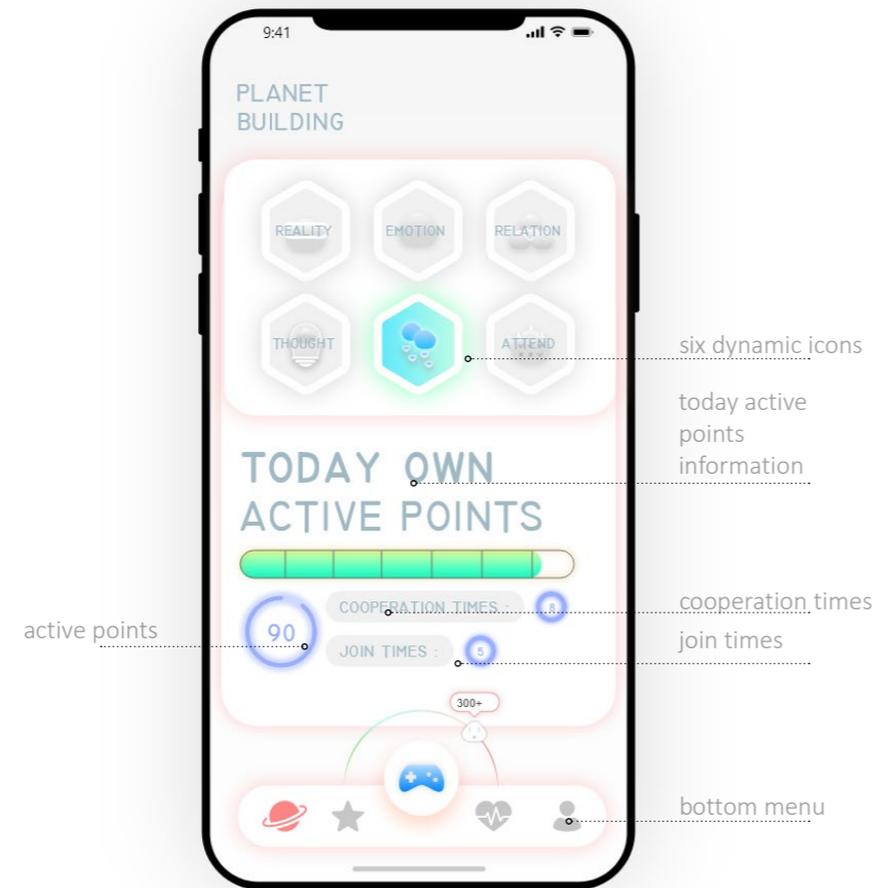
## Active Page - Collective

On this page, users can see the collective activity score and see the details of the activity score: number of cooperation and number of joins.



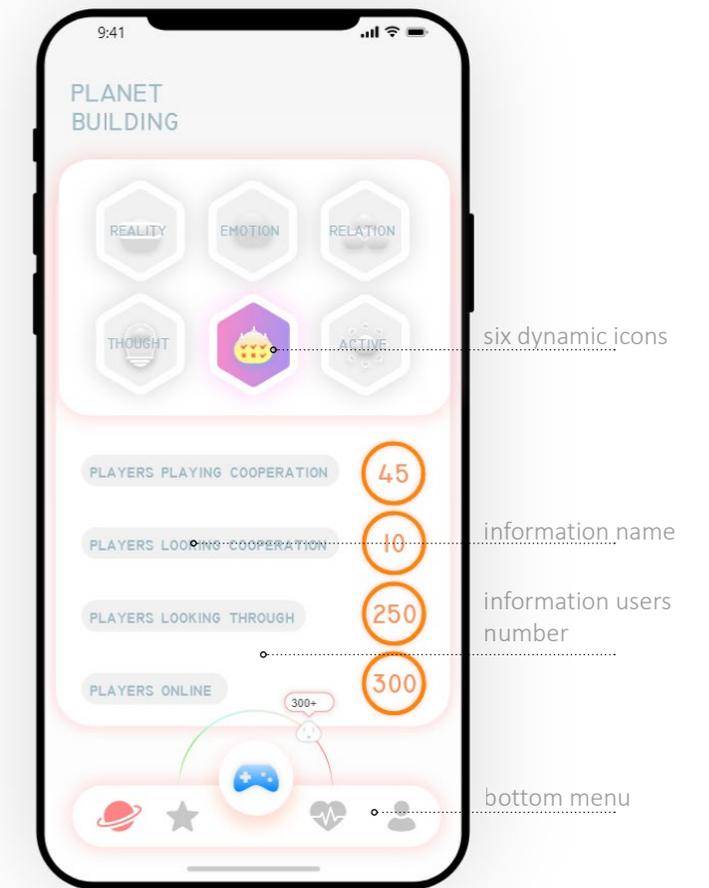
## Active Page - Individual

Users can see the individual activity score and see the details of the activity score: number of cooperation and number of joins.



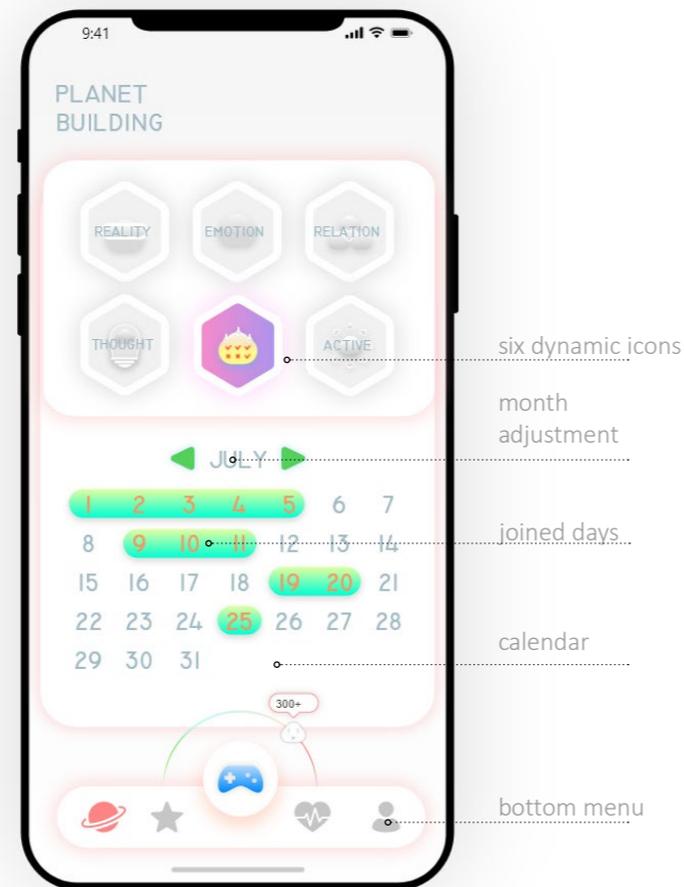
## Attend Page - Collective

Intuitive real-time information display.



## Attend Page - Individual

User's participation process will be displayed through the calendar.



## Accessibility Page - Collection, Health and Profile

Collection page, users can intuitively see the three types of cooperation history and ratings and can view the positive feedback from other players during the cooperation at any time.

Health page users can see the entry images and mood record curves generated by their records on the APP.

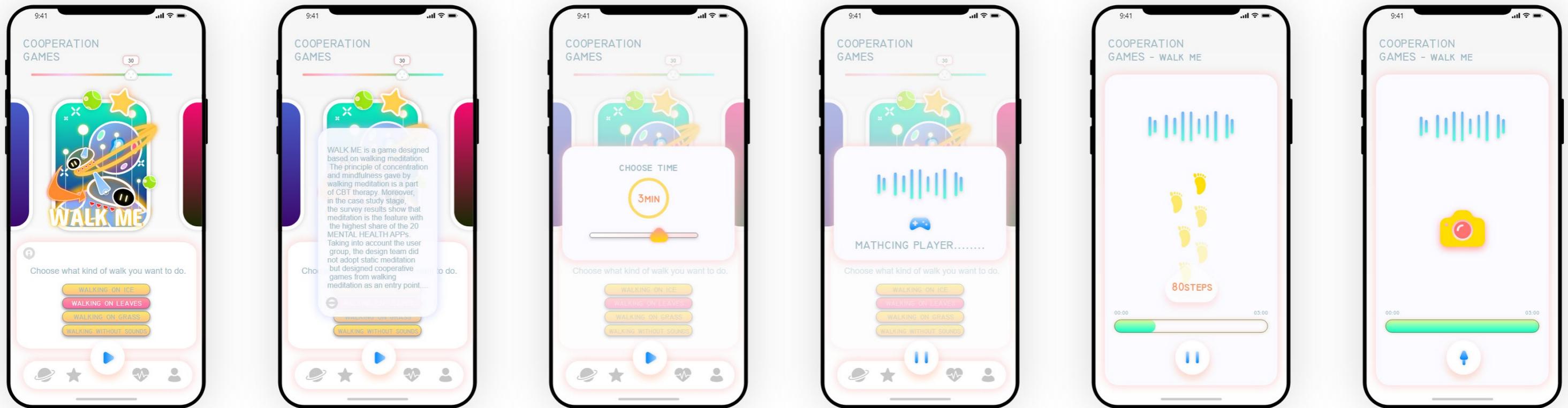
Profile page users can rewrite their self-introduction and see some simple cooperation summaries.



## WALK ME Page

After the player clicks the blue gamepad button, it will enter the interface for selecting a cooperation game.

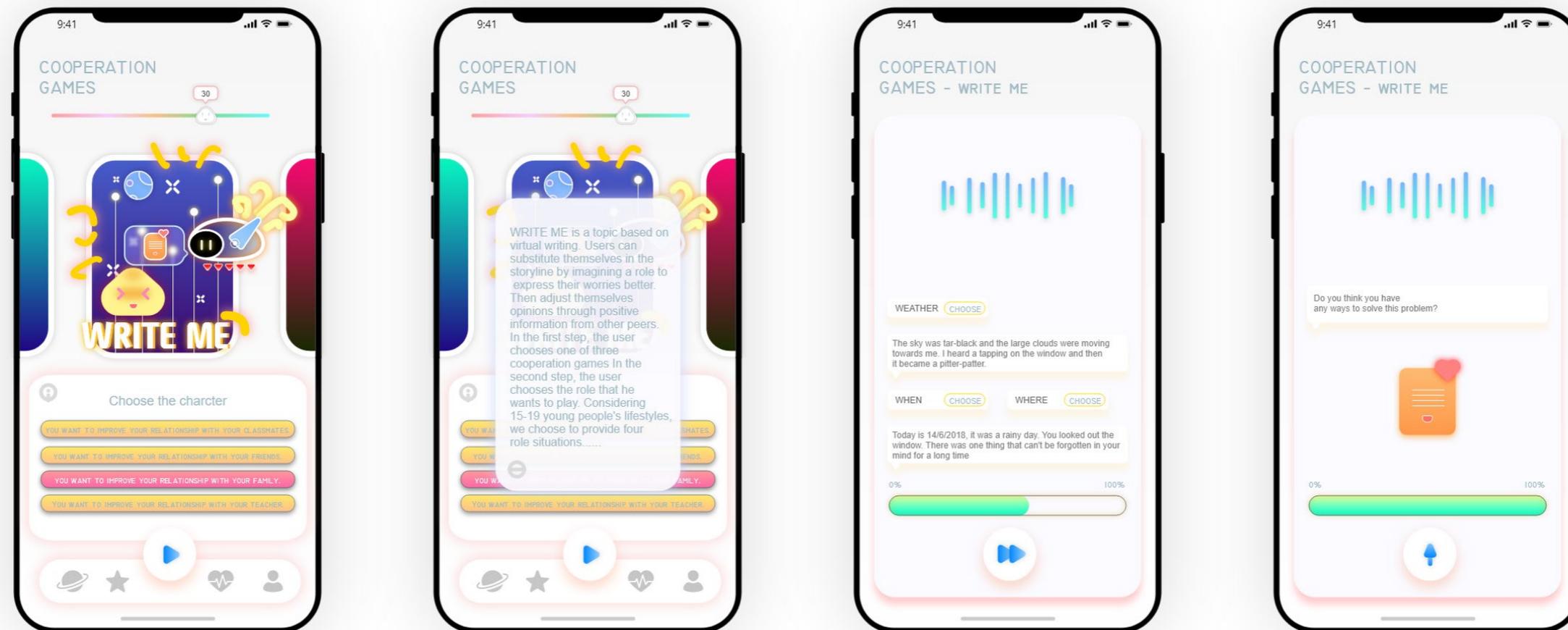
Click the blue play button to play the game after selecting the prescribed option. Users can also view the detailed introduction of the game. Entering the game requires the player to select a time, and a screen that matches the player appears. During the game, the player can listen to the audio and pause at any time. The game will be updated in real-time according to the user's step count. In the end, the user can click the camera icon to take a photo, and click the icon at the bottom to upload and end the game.



## WRITE ME Page

After the player clicks the blue gamepad button, it will enter the interface for selecting a cooperation game.

Users select the prescribed options and click the blue play button to play the game, or view the detailed introduction of the game. Players will fill in the game content in the next step in the voice guidance and can check the progress at any time. Finally, the user can click the letter ICON to check the content, and then click the icon at the bottom to send the question out and end the game.



## WRITE ME Page

After the player clicks the blue gamepad button, it will enter the interface for selecting a cooperation game.

Users find and select a song and click the blue play button to play the game, or view the detailed introduction of the game. Players will complete the establishment of a music space under voice guidance and can view the playlist and listen to songs in the space at any time. Including other players entering the space can view the real-time active information exchange, and the creator can also participate by clicking the letter ICON if they create optional tasks.



# Conclusions

This project studied how young people can obtain peer support through online forums and the cognitive characteristics of young people aged 15-19. It is concluded that reducing loneliness, enhancing normality, and increasing the amount of positive information are the keys to creating an online support space suitable for this group.

Based on the above viewpoints, the APP design was carried out. Due to the lack of test data from actual users, the design process adopted a method of cooperation with psychologists and conducted in-depth interviews with potential users in the early stage. In order to further verify the effectiveness of this APP, more tests and expert support are needed.

This article only studies the cognitive characteristics of adolescence and forum support. However, in the 21st century, young people are already getting support from forums, music software, social software on different topics, games, and other platforms. The cognitive development of 15-19 years old besides the prefrontal cortex, also involves the joint influence of hormones, limbic system, and other factors. Furthermore, although this article mentions the potential harm of negative information to young people, it lacks specific research and data on the harm. The next step can be to study the categories supported by these platforms, combined with more complex brain cognitive theories, and precise definitions of the adverse effects of negative information.

This project's contribution is to provide a new perspective on the design of future mental health software. The author believes that due to the particularity of different development stages, mental health support will increasingly focus on specific groups and

specific ages, and support methods will be more diverse. During the research process, the author found that the application of MENTAL HEALTH is more based on local electronic technology, while the application of online electronic technology in this field is still in its infancy. As a result, the project made a bold vision for the future combination of online technology and mental health. Young people can obtain psychological needs other than professional treatment through different online cooperative games.

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# Annex

Annex 1 horizontal comparison of 20 apps	58
Annex 2 topics young people interested in the KOOTH	60

# Annex 1 horizontal comparison of 20 apps

Number	Name	Platform	Company	Website	Aim People	Aim Disease	Psychotherapy	Effectiveness (whether there is relevant paper)	Treatment Stage [1]	Meditation	AI Chat	Mood Record	Radio Station	Plan Log	Online Therapist	Online Forums	Online Cooperation	Sports	Sleep	Music	Personalize	Gamification	
1	Headpace	iOS,Android	Headpace	headspace.com	Kids&Adults	Reducing stress, improving sleep, increasing focus	Mindfulness meditation	yes	2th	✓	x	x	✓	x	x	x	✓ (Online meditation room)	✓	✓	x	x	x	
2	MIND EASE	iOS,Android	Spark Wave	mindease.io	Not informed	Reducing stress, anxiety and worry	* Progressive Muscle Relaxation * Mindfulness Meditation * Cognitive Therapy	No (only evaluated by Psychologist)	1th	✓	x	✓	✓	x	x	x	x	x	x	x	x	✓ (Can decide the landscape theme of home page)	x
3	Cove	iOS	Humane Engineering / NHS England	www.cove-app.com	Not informed	Play in improving emotional and mental health by encouraging self-expression	Uses music instead of words to express a feeling or mood.	No (only evaluated by Psychologist)	1th	x	x	x	x	x	x	x	x	x	x	✓	x	x	
4	Moodnotes	iOS	Ustwo / Thriveport	www.ustwo.com/work/moodnotes	Not informed	Help people to become more aware of their moods Help people identify which thinking traps they are falling into Facilitate an experience which helps people develop more positive thinking habits	Cognitive Behavior Therapy Positive Psychology	yes	1th	x	x	✓	x	x	x	x	x	x	x	x	x	✓ (Choose an artistic style that expresses your mood)	x
5	Balance	iOS	Elevate Labs	www.balanceapp.com/	Not informed	Anxiety, Commute, Emergitz, Gratitude, Midday Reset, Procrastination, Tada, Sound Scan, Wake Up, Breaking Habits, Breathe, Concentrate, Couples-Creativity, Motivation, Unhinded	Cognitive Behavioural Therapy	No (only evaluated by Psychologist)	1th	✓	x	x	✓	x	x	x	x	x	x	✓	x	✓ (Using an audio library with thousands of files, Balance assembles meditations personalized for you.)	x
6	Moodpath	Android	Moodpath	mymoodpath.com/en/	Everyone who feels emotionally burdened and is worried about suffering from clinical depression.	helps you track, monitor, and understand your complaints in a structured manner and, perhaps, find out which negative behavior could be connected with a worse well-being.	Cognitive Behavioural Therapy	yes	1th	x	x	✓	✓	x	x	x	x	x	✓	x	x	x	x
7	Youper	iOS,Android	Youper	www.youper.ai/	Not informed	understand yourself, improve your relationships, sleep better, overcome stress, anxiety, and depression, feel more balanced and happier.	Cognitive Behavioral Therapy (CBT), Acceptance and Commitment Therapy (ACT), Mindfulness, and Meditation	No (Charged by Psychologist)	1th	✓	✓	✓	x	✓	x	x	x	x	x	✓	x	✓ (Personality analysis)	x
8	TalkLife	iOS,Android	TalkLife	www.talklife.co/	Not informed	If you are struggling with mental health or even struggling with self-harm, then you may feel lonely and may be a bit bad.	Peer support and online communication	yes	2th	x	x	x	x	x	x	✓	x	x	x	x	x	x	x
9	Calm Harm	iOS,Android	Stem4	calmharm.co.uk/	Teenagers	Help you resist or manage the urge to self-harm	Dialectical Behavioural Therapy (DBT)	No (Charged by Psychologist)	1th	✓	x	✓	x	x	x	x	x	x	x	x	x	✓ (Can decide the colour of theme)	x
10	Clear Fear	iOS,Android	Stem4	www.clearfear.co.uk	Children & Young people	Face your fear with the free Clear Fear app and learn to reduce the physical responses to threat as well as changing thoughts and behaviours and releasing emotions.	Cognitive Behavioural Therapy	No (Charged by Psychologist)	1th	x	x	✓	x	x	x	x	x	x	x	x	x	✓ (Can decide the colour of theme)	x
11	CombinedMinds	iOS,Android	Stem4	combine minds.co.uk/	Teenagers and their families , friends	Helps families and friends to find ways to provide the right environment to help the individuals they support affect their own change. As important influencers in the lives of young people, this provides positive impact on their mental health.	"Strengths-Based" Approach	No (Charged by Psychologist)	1th	x	x	x	x	x	x	x	x	✓ (Co-develop and understand what activities each other can reduce or increase anxiety)	x	x	x	x	x
12	AntiStress	iOS,Android	ArcadeGames	/	Not informed	Not informed	Not informed	No	1th	x	x	x	x	x	x	x	x	x	x	x	x	✓ (42 super easy games to play)	x
13	Pocketcoach	iOS,Android	Pocketcoach	www.pocketcoach.co/	Not informed	Self help for anxiety, stress and panic	Cognitive Behavioural Therapy, mindfulness and ACT (Acceptance and Commitment Therapy)	No (Charged by Psychologist)	1th	x	✓	✓	x	x	x	x	x	x	x	x	x	x	x
14	CBT Companion	iOS,Android	Swasth	www.swasth.co/cbt-companion/	Not informed	Changing your thought patterns and living a joyful life	Cognitive Behavioural Therapy	No	1th	✓	x	✓	✓	✓	x	✓	x	x	✓	x	x	x	x
15	Skills	iOS,Android	Vacay	vacay.dev/de/produkte/skills/	Not informed	Can be used by anyone having to cope with stress. The app can also be used to assist self-management during psychotherapy.	Dialectical behaviour therapy or DBT	No (Team with Psychologist)	1th	x	x	x	x	x	x	x	x	x	x	x	x	x	✓
16	Sanvello	iOS,Android	Sanvello	www.sanvello.com/	Not informed	Whether you manage an ongoing condition like anxiety or depression, have acute stress or anxiety related to an event like coronavirus, or simply want to improve your mental well-being, Sanvello gives you the help, support, and resources you need to feel more in control and happier over time.	Cognitive Behavioural Therapy	yes	2th	✓	x	✓	✓	✓	✓	✓	✓	x	x	✓	x	x	x
17	InnerHour	iOS,Android	InnerHour	www.theinnerhour.com/	Not informed	Access therapy-based self-help tools for a range of mental health concerns: • Depression: Make small changes to overcome depression • Anxiety: Attain calm and balance with strategies for anxiety relief • Sleep: Build a sleep schedule and develop habits to sleep soundly • Stress: Keep a check on your stress levels to feel calm and in control • Anger: Channelise your anger and build learn strategies to cool down • Mindfulness: Practice essential skills to enhance your wellness in life.	CBT (Cognitive Behaviour Therapy), Positive Psychology, and Mindfulness	No (Charged by Psychologist)	1th	✓	✓	✓	✓	✓	✓	x	x	x	x	✓	x	x	x
18	MindShift-CBT	iOS,Android	Anxiety Canada	www.anxietycanada.com/resources/mindshift-cbt/?_ga=2.2349534.130088280.1590929189-4103990.1590929189	Not informed	•worry •panic •perfectionism •social anxiety •phobia	Cognitive Behavioural Therapy	No (Team with Psychologist)	1th	✓	x	✓	✓	✓	x	x	x	x	x	x	x	x	x
19	Wysa	iOS,Android	Wysa	www.wysa.io/	Kids&Adults	Dealing with stress, anxiety and depression or coping with low self-esteem, then talking to Wysa can help you relax and get unstuck	Cognitive Behavioural Therapy	yes	2th	✓	✓	✓	✓	✓	✓	x	x	x	✓	x	x	x	x
20	Kooth	Browser	XenZone	www.kooth.com/	Children and Young people (11-25)	suffered emotional problems, self-harm, relationships, depression, anxiety and lots of other issues (wild young people mental health)	1.Needs based access: providing children and young people with access to digital support as and when the need arises 2.A choice of support: whether through information or	yes	3th	x	x	x	x	✓	✓	✓	x	x	x	x	x	x	x

[1]  
1.In primary health,as a means for the promotion and prevention of mental health .  
2.In secondary and tertiary prevention, as a means for intervention in mental health problems .  
3.As a vehicle to improve public systems and mental health management .  
4.As a tool for the training of mental health agents

Annex 2 topics young people interested in the KOOTH

Viewer	Political	Viewer	Reading Creation	Viewer	Mental health	Viewer	Game	Viewer	Welbeing	Viewer	Movies, TV, Music	Viewer	Disability	Viewer	Interest
15	Protest against discrimination	6	Fantasy novels express themselves	7	Correct use of mental health terminology	15	Wonderful facts about some games	19	LGBT historical figures, glossary	18	Favorite movies and TV series	14	Self-harm and peer support	13	Shaggy pets help you through difficult times
		6	Self-esteem poetry creation	7	Gender anxiety disorder	23	Best Game Selection	20	LGBT collaborative adjustment	52	Playlists to help you get through pneumonia	7	Autism and interpersonal relationships	22	Hobby
		13	Reading club	10	Relaxation breathing application	11	Benefits of games	19	Come out	63	Enjoying black music	10	Alternatives to self-harm	19	Beginner Creative Cooking
		18	Dear you	10	Depression and anxiety story sharing			54	Share your gratitude			27	My recovery story	29	Create your own self-care box
		24	Collaboration challenge	7	How to help your body image			25	Little things can do something					18	Sad for pets
		18	A poem called poison	26	What is obsessive-compulsive disorder			24	Practice feeling calm					314	Unique hobby
		11	Why should I write a diary	13	What is anorexia			17	Gender identity						
		10	Bullying	19	What is an eating disorder			13	School care						
		43	Help me	16	Examination pressure			12	Helping the homeless in winter						
		34	Creative Challenge: Fictional characters	142	5 ways to solve anxiety			11	Talking about sex						
				22	Strategy to stay alive			40	LGBT National Anthem						
				425	What are the benefits of sleeping			441	What is family						