

UX/UI design for meditation app to promote mental health of adolescents

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Abstract

Recently, in addition to school violence, which has become a social issue among adolescents, problem behaviors such as self-harm is increasing, and it is pointed out that it threatens the mental health of adolescents. This study proposes a meditation app (tentative name: Koala) for the improvement of adolescents' mental health. In order to complement the limitations of the existing meditation apps for adults, such as static meditation and boring meditation music, and to make them friendly to teenagers, we want to dynamically implement mind management contents by adding music/movements corresponding to art therapy. To this end, as an essential element of the meditation app service design, a reward system such as a level system and badge was built to increase user participation, and it was designed to recognize and manage the emotional state of the youth through management of the meditation diary and seed system. In particular, we propose a character and UX/UI design that can bring out the immersion, activeness, and interest that cannot be given by general content to young people with low concentration through synesthetic experiences.

Keyword : UX/UI Design, mindfulness meditation, Self-harm behavior, youth self-harm, cognitive emotional regulation strategy, App Development

1. Introduction

Even though meditation and Zen have become common in recent years, you can see that books and apps related to these are constantly being released. This shows that meditation is still a popular subject of interest to people today. It is also due to the need for people who have been immersed in Western material civilization to go on a journey of the mind to find the essential self rather than the self seen outside, or to obtain a comfortable rest for body and mind through meditation with passion for composition [1].

With the pandemic that has been over two years, people around the world are longing for 'With Corona' and 'Endemic' beyond Corona Blue. The most important thing in living through complicated

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* This work was supported by the Ministry of Education of the Republic of Korea and the National Research Foundation of Korea(NRF-2020S 1A 5A 2A 03045953)

Received(April 30, 2022), Review Result(1st: May 17, 2022), Accepted(June 10, 2022), Published(June 30, 2022)



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times is to take good care of your own mental health. One of the simplest ways to take care of the mind is meditation. Meditation is an efficient and simple activity to take care of the health of the mind just like exercising to keep the body healthy. It is particularly effective in managing negative emotions such as depression and anger and maintaining composure. Meditation is not just about burning incense, sitting on a yoga mat and listening to dreamlike music. Emptying your thoughts and reaching trance can be meditation, and sitting still and concentrating on your breath is a form of meditation. The point is to clear your mind and focus on the present [2].

Recently, in addition to school violence, which has become a social issue among adolescents, problem behaviors such as self-harm is increasing, and it is pointed out that it threatens the mental health of adolescents. The causes of these problem behaviors can be divided into internalized psychological problems such as depression or anxiety, or externalized problems such as pain or anger expression and conduct disorder. Adolescents often show self-harm or various problematic behaviors in an attempt to escape painful emotions. In particular, it is well known that adolescents, who have low ability to recognize, understand, and express their emotions, devote themselves to emotional behavior in order to avoid the stress or emotional pain they feel in everyday life [3].

The effectiveness of mindfulness-based treatment programs has been proven in various psychological disorders. In particular, Mindfulness Based Stress Reduction (MBSR), a stress reduction training developed by Kabat-Zinn, is reported to be effective in improving chronic pain, depression, anxiety disorders, and panic disorders. Recently, it has been reported that mindfulness meditation-based psychotherapy is effective in improving the psychological well-being of adolescents. It is also reported to be effective in adolescents who show depression and test anxiety in Korea [4].

Apart from traditional face-to-face counseling, recently, with the development of IT technology, the approach to mental health intervention is expanding. A treatment method using a smartphone app is being developed beyond the Internet platform and is evaluated as cost-effective. In addition, the advantage of reducing the stigma effect of face-to-face treatment is emerging. Research results are accumulating that smart-based psychotherapy is very effective. A recent meta-analysis study reveals that smartphone-based psychotherapeutic intervention is very effective in improving depression, anxiety, and emotional well-being of adolescents [5].

In the West, many studies using meditation apps for psychological health of adults have been reported. In particular, psychotherapy methods based on mindfulness meditation have been developed and commercialized as meditation apps or psychotherapy apps. In Korea, mindfulness meditation-based apps Mabo (www.mabopractice.com) and Elephant (www.kokkiri.kr) have been developed to lead the mind

healing field. However, using this self-healing app developed for adults as it is for teenagers may raise questions about its effectiveness. Due to the nature of adolescents, boring meditation comments and static meditation training may act as a limit to the continuation of self-help apps. In Korea, various chatting apps for mental health have been developed for adolescents, but systematic use is difficult and management is poor [6][7].

This study aims to analyze existing meditation app interface design cases and present design concept guidelines for meditation app Koala for teenagers. Chapter 2 analyzes existing cases of meditation app design as an existing study. Chapter 3, which corresponds to the main body, describes the design of content design for youth mindfulness meditation app Koala. Chapter 4 describes the design of the Koala app by applying the latest app design trends and app design content preferred by teenagers. Finally, Chapter 5 describes the conclusion and future research.

2. Existing research

2.1 Meditation Application Market Trend and Prospect

In the study “Understanding and Managing Stress,” meditation helps to relieve tension through breathing and can help reduce stress by giving you insight into yourself and the world around you. It is also being studied to have positive effects on learning improvement, health promotion, performance improvement, drug addiction treatment, psychotherapy, and self-discipline [8].

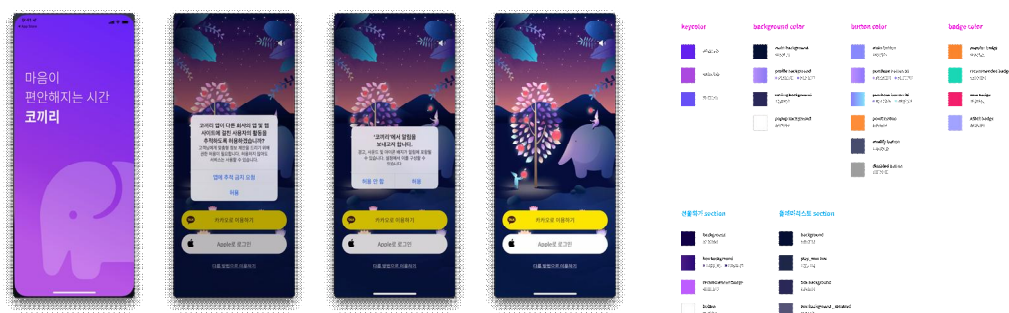
Overseas, there are Calm, Shine, and 10% Happier as existing apps of the same type. The VR meditation app has also been commercialized and is being used by users. Calm, a representative meditation app, provides a variety of meditations, such as ‘7-Day Cal’ for beginners, one-day class ‘Daily Calm’, and ‘Good Night Story’ that encourages comfortable sleep. Other than classic meditation music, popular artists such as Sam Smith's ‘How Do You Sleep’ and Sabrina Carpenter's ‘Exhale’ are also listed. recordable The headspace meditation app can select a voice that is comfortable to listen to among men and women, and the speed can be adjusted, so delicate consideration for subscribers stands out. I do group meditation at set times, and the fact that I have a colleague meditating with me somewhere gives me strength [9].

Recently, a meditation app using VR and AR has been actively produced. The general meditation app experiences the process of meditation according to Gru's voice guide who leads the meditation process with ‘closed eyes’. Dozens of VR meditation apps have already been released overseas, but it is difficult to find one developed by a Korean company. This is because there are various opportunities to

meditate offline in Korea. Most of the overseas VR meditation apps have titles that include the word Meditation, but the word has a broader meaning than we think of meditation because it includes Buddhist, Hindu-style meditation, non-religious meditation, and Christian-style meditation.

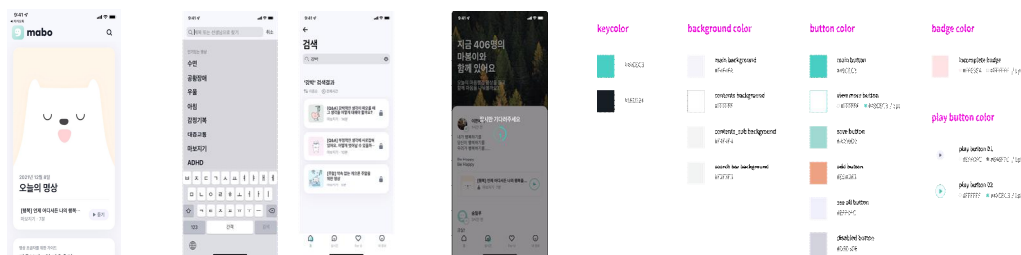
2.2 Meditation app design example

The kokkiri app, a domestic meditation app, has gained explosive popularity with the participation of experts in each field familiar to the public, and has established itself as a representative meditation app in Korea. The main program provides ‘Daily Meditation’ where you can listen to monk Hyemin’s warm comfort, and self-esteem classes by Kwak Jeong-eun and Daniel Tudor to help improve relationships with lovers or family members. [Fig. 1] shows Kokkiri app Interface Design.



[Fig. 1] Kokkiri app Interface Design

Mabo is one of the most popular meditation apps in Korea. ‘Mabo’, an abbreviation of Mindfulness, is Korea’s first mindfulness meditation app. It can be used when you want to look into your heart anytime, anywhere, such as when you don’t want to do anything, when you are angry, when you are working, or when you are eating. The community is active, allowing real-time experiences to be shared, comfort and help. [Fig. 2] shows Mabo app Interface Design.



[Fig. 2] Mabo app Interface Design

The results of UX/UI trend benchmarking existing meditation apps are as follows. The home screen of the meditation app is different from other apps. Other apps place content of interest from the top on the home screen, but meditation apps are different. It gives modern people, who are not deceived by what is in front of them, who are swept up by pieces of emotion here and there, to pause for a moment and take care of their minds. So, only images, not content, are placed on the home screen to have a pause. It is necessary to arrange meditation by subject, to establish a metaphor image that resembles emotion, and to establish an identity. With an intuitive and simple content arrangement, a specific situation is searched for meditation beginners and recommended meditation is provided to users who do not know which type of meditation to listen to. Each tab at the bottom provides a variety of content by topic. Overall, the beauty of the blank space was used, pastel tones were used comfortably, and functions such as writing a diary to look back on oneself were emphasized.

3. Adolescent psychotherapy meditation app koala content design

3.1 Clinical and Developmental Psychology

The contents to be composed in the clinical and developmental psychology area are composed of the following areas.

- Activity 1. Explore your self

Adolescence is a period of exploration of one's own identity. But sometimes they get lost without knowing who they really are. Taking time to get to know who you really are is the foundation of your self-esteem.

- Activity 2. Find your strengths

People with healthy self-esteem can respect their strengths and take pride in their achievements.

- Activity 3. Challenging cognitive errors

Cognitive errors are irrational, exaggerated, or inaccurate, making events feel far more serious than they really are. Cognitive errors that can exacerbate depression can be detected and corrected through a fun expression method.

- Activity 4. letter to me

If you suffer from shame, you can relieve these feelings by accepting your own imperfections. All human beings are imperfect, so I too can be imperfect. We express more comfort and compassion to others than to ourselves. Let the compassion you express for others be expressed in the same way for yourself. Write down words of consolation you can give yourself in the 'Letter to me' box below.

- Activity 5. write a thank you letter

When I realize that I am connected with other people, I can feel that I am not alone and that I am respected. You may feel connected these days through social media and cell phone messages, but actually writing a handwritten letter to them can be a completely different experience. Thinking about the person who is important to you, feeling how many people are connected to you, and writing a letter of appreciation for the support, empathy, and love you receive from them can help you feel that you are valuable.

- Activity 6. Know your value

Self-efficacy can be improved by finding values that are important to you, ranking them, and achieving them.

- Activity 7. throw away anxiety

Write down the thoughts, situations, and feelings that are causing your anxiety and indicate the degree of anxiety that is causing it. You can let go of anxiety by crumpling the completed activity paper, throwing it in the trash, or tearing it apart.

- Activity 8. Detect boredom

Being a detective observing your own life can help you notice and learn why you get bored, how boring you feel, and how to pay attention before you get bored.

3.2 Motion therapy

In this study, we derived important concepts that can be applied and implemented in VR dance/movement therapy based on the existing literature related to artistic psychotherapy or psychotherapy.

1) Virtual Body: The basic tool used in dance/movement therapy uses the movement performed through the body with a three-dimensional structure for psychotherapy.

2) Virtual Space: The sense of distance between people differs according to the intimacy of the culture and relationship.

3) Virtual Environment: It is possible to implement various places in the virtual world. It provides a similar experience as if you have visited a place you want, whether indoors, outdoors, in a natural environment, or in an urban environment.

4) Virtual Image: In dance/movement therapy, depending on what kind of image is provided, the characteristics of movement can be changed. For example, as in the projection technique mainly used by Blanche Evan, depending on which image is used, such as rocks, wind, wild animals, etc., one can

have an understanding of the subject or it can become an intervention.

5) Virtual painting: As previously introduced in VR art therapy, it was reported that painting promotes activation of body movements. In dance/movement therapy, the square breathing method often used for self-stabilization or slow nasolabial breathing is used.

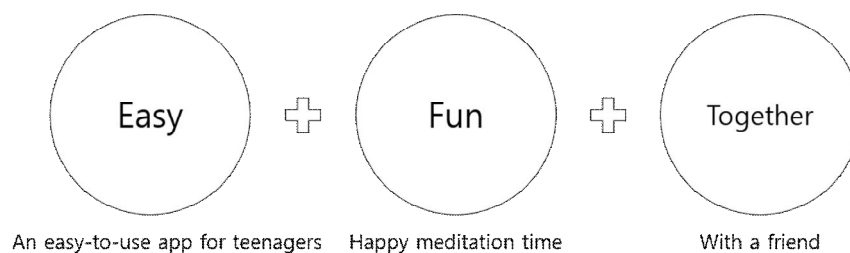
3.3 Music therapy

Social and environmental restrictions caused by the corona disaster are hindering the achievement of developmental tasks of youth. In particular, the loss of cognitive/emotional experience for emotional recognition and the maturation of accommodative ability limits neuroplasticity of the brain and may be a risk factor for mental health. When considering communication and experience in 'virtual/augmented reality' as an alternative to holistic development in a realistic and future way.

The purpose of this study is to study whether the cognitive neurological and socio-emotional approach of music therapy can be an effective intervention technique to promote mindfulness among adolescents. Analyzing prior studies related to active listening and musical performance through upper cognition, and confirming the effect on mindfulness. The purpose of this study is to prepare for research on the development of psychological education music therapy programs for adolescents by confirming the elements that can be realized in virtual reality. Music, a universal hobby, enables communication beyond language through higher-order cognitive processes.

4. Koala app design

In this study, keywords were set so that teenagers could spend a pleasant meditation time with their friends to create an easy-to-use app. In other words, the main concept is to have fun and be together with friends. [Fig. 3] shows Koala app main concept diagram.



[Fig. 3] Koala app main concept diagram

4.1 Koala app information structure

4.1.1. koala app information design

In this study, in order to supplement the limitations of existing static meditation methods and boring meditation music, and to make them friendly to young people, we try to dynamically implement mind management contents by adding music/movements corresponding to art therapy. By applying the webtoon method or game method that teenagers are passionate about to design, accessibility and practicality are increased. To this end, an analysis of existing meditation app interface design cases and design concept guidelines for meditation app Koala for teenagers were presented.

1) Intuitive and simple content arrangement

For meditation beginners, it searches for specific situations and provides recommended meditations to users who do not know what kind of meditation to listen to. Each tab at the bottom provides a variety of content by topic.

2) Playback screen that provides comfort

It provides users with a sense of relaxation by consistently using blank spaces on the play screen. When the content is played, it informs the playback information, and after about 3 seconds, an emotional image is shown on the screen to help you focus on breathing and sound.

3) Content placement

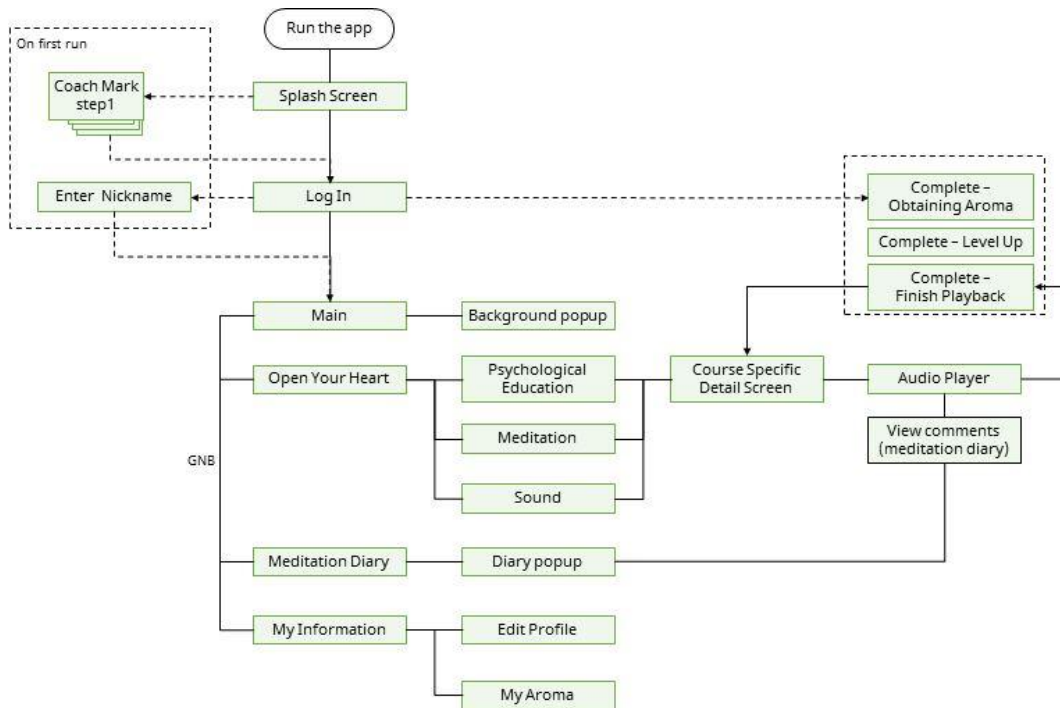
Content that lists only text one after another reduces user participation and concentration. Therefore, the interaction is inserted at the appropriate timing without causing user confusion. You can use simple scrolling and check hidden content, or use various gestures.

4) Storytelling & Easy to Manipulate

It utilizes a card-type UI that is easy to use and can quickly tell a story. The card-type UI emphasizes the content and can tell the story quickly and easily. Through information such as title, image, text, and source in the card, users can more easily understand the content. Also, since the card UI is familiar with the way cards are manipulated in the real world, it is easy to learn to interact.

5) User convenience

For users who use the app for the first time, a tutorial-type guide is provided through simple gestures. In particular, it is more essential when users provide unfamiliar gestures or unfamiliar functions. [Fig. 4] is a flow chart of koala app information design.



[Fig. 4] Flowchart of koala app information design

4.1.2. User Benefit Definition

In order to increase user participation in app use, we build a reward system that grants freedom in profile configuration, a level system according to usage, and a badge when a specific course is completed.

1) Level system

The membership level system is determined according to the accumulated content usage time, and information is provided on the complete screen and 'My Information' screen after using the content. The menu icon symbolizes the core function and content of the corresponding content and is designed to be intuitively delivered to the user. The icons placed in this document are dummy icons placed for content composition before design work. The selected menu is highlighted and an interaction is executed when touched. [Table 1] shows membership level system.

[Table 1] Membership level system

Level Name	Level	condition
-	Lv.0	Initial stage (no use of content)
seed	Lv.1	Granted when using one piece of conten

Sprouting	Lv.2	Granted for 1 hour of content
Sprouts	Lv.3	Granted for 3 hours of content
flowers	Lv.4	Granted for 10 hours of content
berries	Lv.5	Granted for 30 hours of content

2) Badge

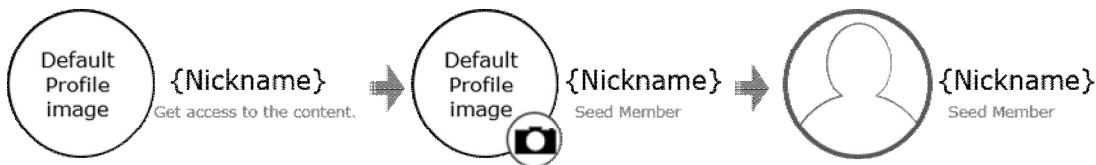
The badge system is given according to the conditions of content use and the number of visits to the app. [Table 2] shows Badge system.

[Table 2] Badge system

Badge Name	condition
lavender	Granted on visits 24 hours after app installation
Rosemary	Granted when you have posted 1 meditation diary
Peppermint	Granted when using all the content of the sound
Tea Tree	Granted when using all the content of meditation
Eucalyptus	Granted when using all courses in psychological education

3) Profile configuration

You can upload or replace your profile image from the seed level. [Fig. 5] is profile configuration.



[Fig. 5] Profile configuration

4) GNB (Global Navigation Bar) Definition App

GNB is floating at the bottom of the screen and provides links to access main content menus. GNB prints on all pages except pop-ups. Each menu link in the app GNB is composed of icons and text, and when touched, an interaction that can attract the user's interest is executed. The selected menu link is treated with highlight and displayed. [Fig. 6] shows GNB (Global Navigation Bar) Definition App.

The menu icon symbolizes the core function and content of the corresponding content and is designed to be intuitively delivered to the user. The icons placed in this document are dummy icons placed for content composition before design work. The selected menu is highlighted and an interaction is executed when touched.

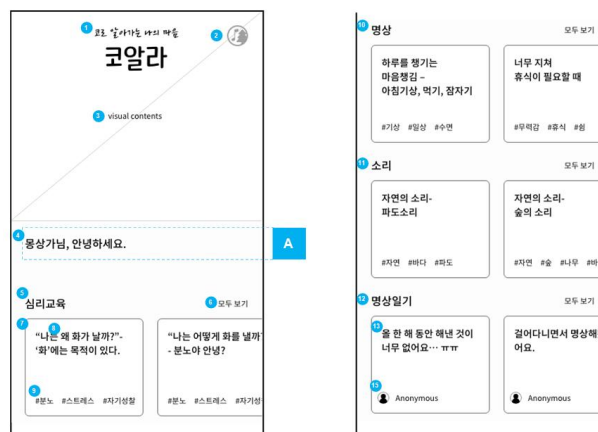


[Fig. 6] GNB (Global Navigation Bar) Definition App

5) Screen Title Definition

The Screen Title area is docked at the top when the content scrolls beyond the screen area. The docked area is configured differently for each depth. The app title area does BI output. Koala background set from my heart to get to know the nose. The icon link takes you to the background settings page. The main visual content welcome text is {username}, hello. Output messages by time period, etc. The content list is available for all psychological education. The text link moves to the entire list of the corresponding content, and in the content banner link area, the entire banner area is a link area and moves to the corresponding content (course or audio content).

The exposure of the posts posted in the meditation diary is a maximum of 30 characters, or 3 lines of 10 characters each, exposed in a banner type. Up to five new update content standards are exposed. It is possible to expose author information such as profile image and nickname in the meditation diary. [Fig. 7] shows meditation diary.



[Fig. 7] Meditation diary

4.2 Koala UX/UI Design

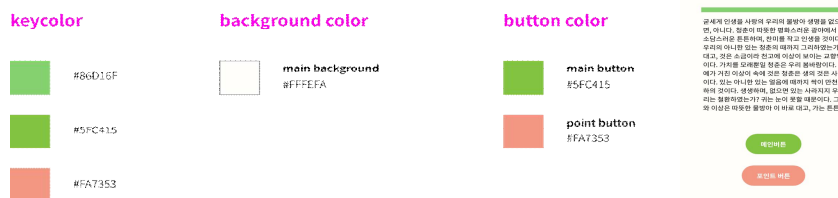
4.2.1 Koala meditation app design overview

Existing apps such as screen composition, UX/UI, navigation, and page content necessary for youth mindfulness are benchmarked and used in the planning stage. By applying the webtoon method or game method that teenagers are passionate about to design, accessibility and practicality are increased. T

4.2.2 Koala meditation app design proposal

1) color

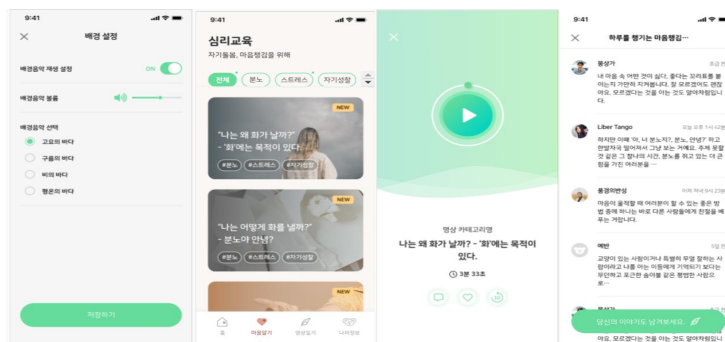
Defines brand color that can respond to various environments (Light mode / Dark Mode) and clearly distinguishes Primary Color and Status Color. [Fig. 8] shows Koala App color definition.



[Fig. 8] Koala App color definition.

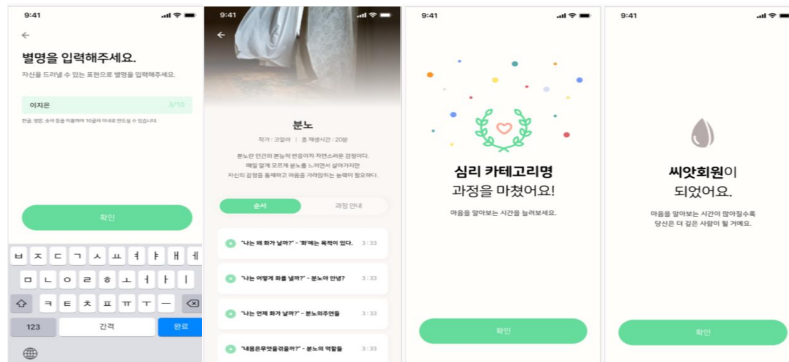
2) Typographic

Mobile devices are physically small and vertically long. Because of these characteristics, vertical rhythm is very important on mobile screens, unlike grids in print media or traditional web design, where horizontal elements such as columns and gutters were important. [Fig. 9] shows Koala App typographic practical screen.



[Fig. 9] Koala App typographic practical screen

Apply the verified aspect ratio to the layout. Since the horizontal width is physically fixed, how to cut it vertically has the same meaning as what horizontal/vertical aspect ratio it will have, and use the familiar golden ratio ($\approx 2:3$), $3:4$, $16:9$, etc. do. The leading of the body is also very important, and the grid is determined based on the leading of the body. [Fig. 10] shows Koala App grid design.



[Fig. 10] Koala App grid design

5. Conclusion and future research

In this study, in order to supplement the limitations of existing static meditation methods and boring meditation music, and to make them friendly to adolescents, the study attempts to dynamically implement mind management contents by adding music/movements corresponding to art therapy. By applying the webtoon method or game method that teenagers are passionate about to design, accessibility and practicality are increased. The main functions include a notification function, providing emotional stories by subject, and obtaining content or mileage upon completion of missions. In order to increase user participation in the use of the app, a reward system has been established, such as granting freedom in profile configuration, a level system according to usage, and granting badges when a specific course is completed. With an intuitive and simple content arrangement, it searches specific situations for meditation beginners and provides recommended meditations to users who do not know what kind of meditation to listen to. The design used a graphic style suitable for each situation rather than a single graphic style. Design effects that express a sense of depth such as shadows, three-dimensional effect, and gradation on all elements such as image frames and icons were excluded as much as possible. This is a big difference from the skeuomorphic design that looks realistic, that is, looks like 3D.

As a result of subsequent research, it was determined that synesthetic experiences could induce

immersion, activity, and interest that cannot be given by general content to adolescents with low concentration. We intend to proceed with in-depth research with self-harm as a representative subject area.

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