

# Mind Battery

Mobile application supporting call center workers' mental wellbeing

Mobile

UX/UI

Period

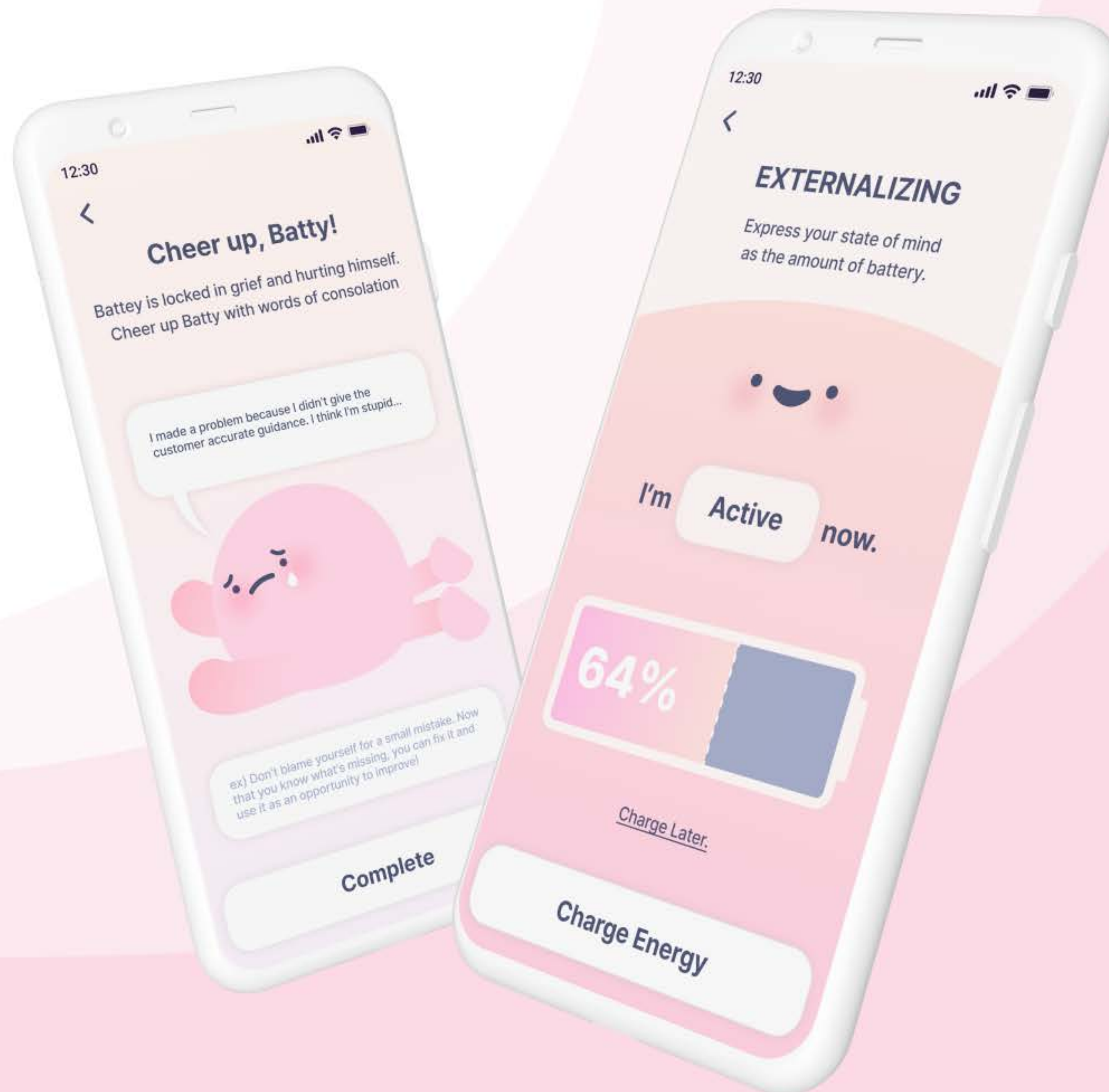
2022. 09 - 2024.09

Roles

Planning, Research, Interview, UX/UI design, Interaction design

Tools

Figma, After Effects

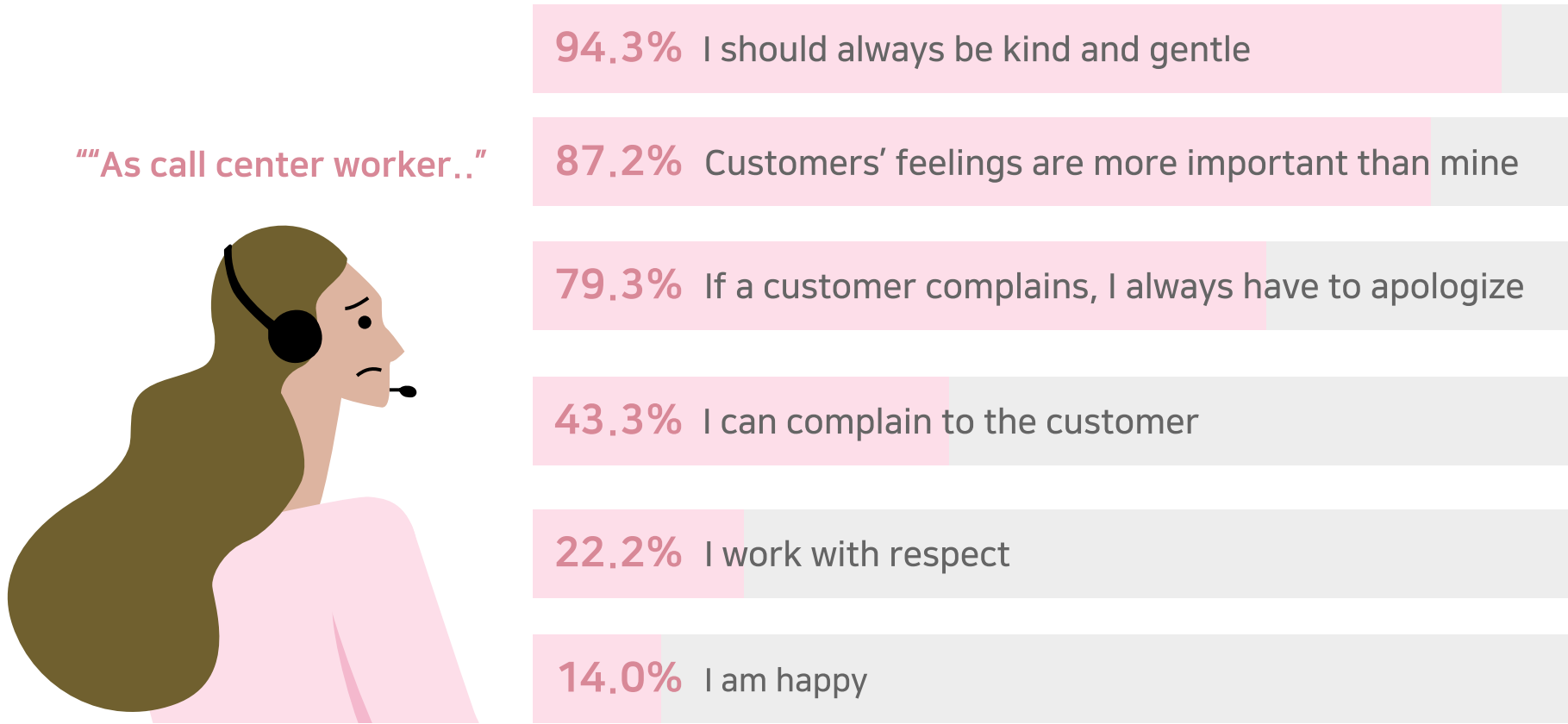


# BACKGROUND

## Call Center Workers' Mental Health Issues

Call center workers often experience emotional exhaustion due to needing to act positively during customer interactions, handle many tasks quickly, and focus on customer service constantly. Moreover, all work-related behaviors, including breaks, are automatically recorded, with managers continually monitoring each employee’s activities. Therefore, call center workers struggle to manage their stress at the workplace.

Call center workers respond to **more than 100** phone consultations per day.  
@Raj Srinivasan, Jerome Talim, and Jinting Wang. 2004. Performance analysis of a call center with interactive voice response units.



@JobKorea x Albamon, Results of a survey of 1,128 call center employees

# DESIGN PROCESS

## 1 Formative Study

We conducted focus group interviews with six call center employees to understand their work environment and what is needed for stress management.

## 2 MindBattery Design

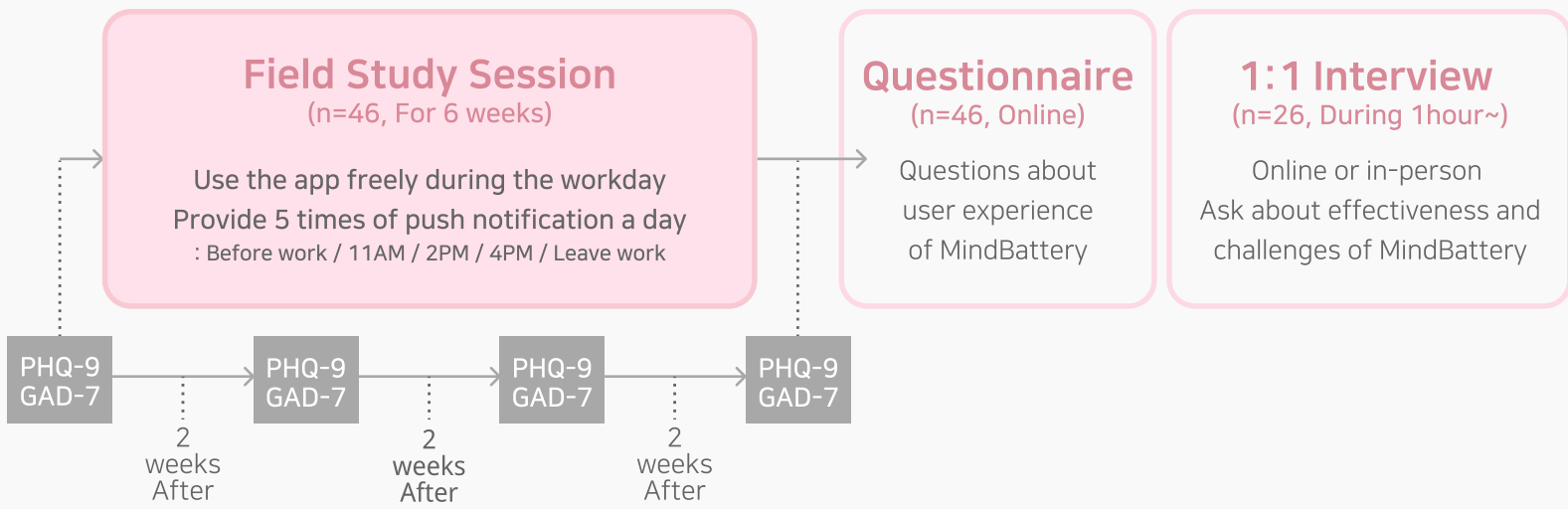
We designed MindBattery, a mobile application to help call center workers manage stress during their workday. The interventions for quick and easy relief from negative emotions were developed based on clinically proven methods, such as Cognitive Behavioral Therapy (CBT) and mindfulness, with the consultation of mental health professionals.

## 3 MindBattery Prototyping

We developed the MindBattery application by collaborating with a software company.

## 4 User Test

A six-week field study adapting MindBattery was conducted with 46 call center workers. Surveys were taken every two weeks to measure depression(PHQ-9) and anxiety(GAD-7). After the field study, participants were surveyed and interviewed to assess the application's effectiveness and further needs.



# INSIGHTS & SOLUTION

## Insight

### Difficulties with Emotion Recognition

Call center workers cannot afford to think about their emotions. Some are so used to suppressing emotions and do not know how to express them.

### Lack of Time to Relieve Stress

After a call ends, workers must report about it before the next one. They want to release stress but rarely have time to take a break during work.

### The Need for Psychological Distance from One’s Situation

Even after a stressful situation has passed, dwelling on it negatively affects their feelings after work and the next day.



## Solution

### Utilizing the Battery Metaphor

Visualizing abstract emotional states as battery levels helps users easily identify their feelings. Self-reporting allows users to reflect on their emotions and what influenced them.

### Quick Stress Relief

We provide various evidence-based interventions ("Charging activities") to help users quickly relieve stress and improve their emotional resilience.

### Mind Battery Report

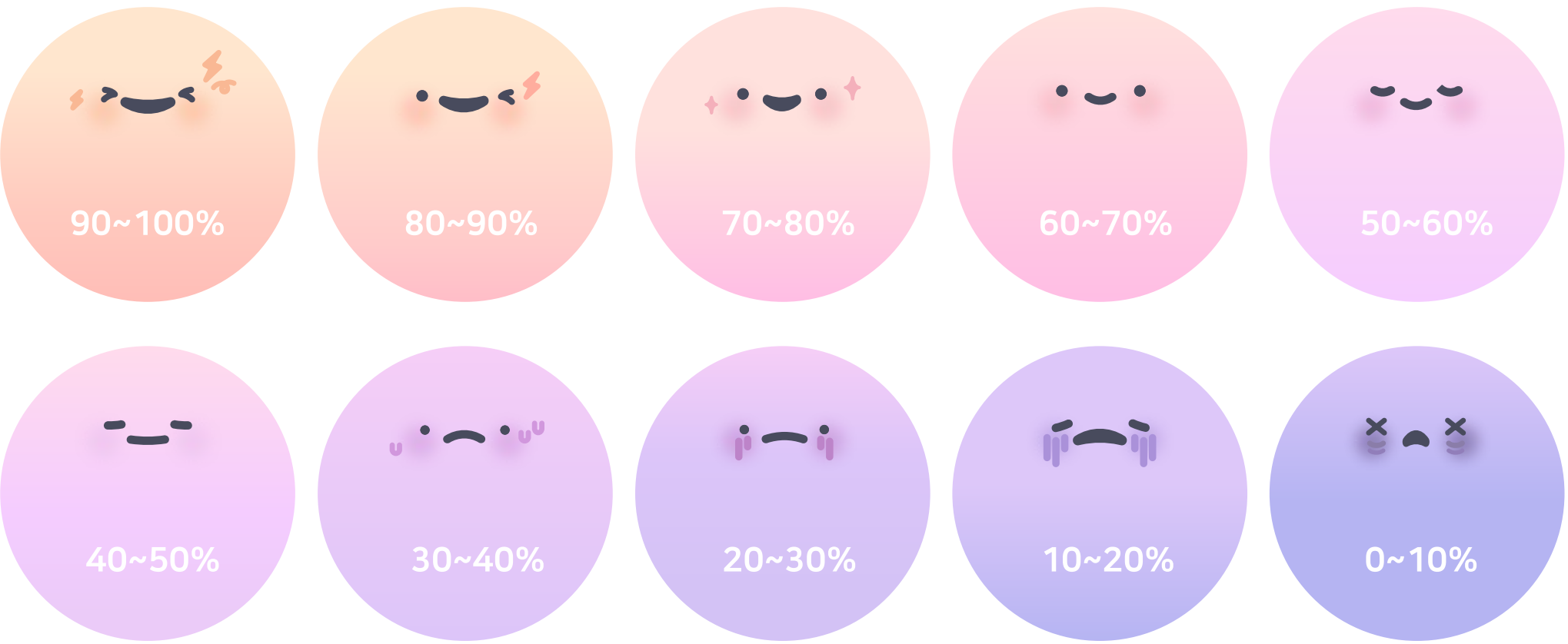
The Mind Battery Report, available daily after work and on weekends, helps users leave their emotional situations and reflect objectively.



# DESIGN CONCEPT

## Managing Emotions with Batty

Batty is a character that accompanies users on their journey to manage their mind battery. Batty's state reflects the user's emotional state. His expression and face color change for every 10% interval of the battery level.



## Batty in Charging Activities

During a charging activity, users can directly interact with Batty. For example, users can cheer for Batty when he is depressed or let him to make a barrier for the user that protects them from stressful situations.

**Protect ME!**

Click batty to make a barrier

I'll protect you! Click click me!

**Smile brings luck**

Make Batty to smile by petting him

**Cheer up, Batty!**

Batty is locked in grief and hurting himself. Cheer up Batty with words of consolation

I made a problem because I didn't give the customer accurate guidance. I think I'm stupid...

ex) Don't blame yourself for a small mistake. Now that you know what's missing, you can fix it and use it as an opportunity to improve!

MINDBATTERY DESIGN

Intervention Design

- The mobile-based short-form interventions for quick and easy relief from negative emotions were developed based on clinically proven methods, such as Cognitive Behavioral Therapy (CBT) and mindfulness. All interventions were consulted by mental health professionals.

Theme	Title	TASK	Reference
부정적인 감정 잘 다루기	나 용서하기	1. 자신에게 용서할 말을 적어보기. 2. 작성 완료 후 따라 읽기. 3. 그간 작은 목표를 돌아보기	- <a href="https://dshab.fes.harvard.edu/self-compassion">https://dshab.fes.harvard.edu/self-compassion</a> "만약보건원(2018). 감성노동 및 직무스트레스 관리.pdf" "심수를 했을 때 자신을 용서하는 것이 중요하다. 자신을 용서하지 않으면 자괴감을 갖는 데 행태가 된다. 그러나 최대한 빨리 자신의 실수를 문서화도록 노력해야 한다 (1) 지켜라지 말고 '실수했지만 괜찮아. 난 여전히 노력하고 노력하는 사람이야'라고 스스로에게 말해보세요."
	감정에 이름 붙이기	1. 자신을 가장 힘들게 하는 감정 선택 2. 그것이 어떤 대상, 상황에 대한 것인지 구체적으로 적어보기	<a href="https://www.whe.int/publications/items/7769249005927">https://www.whe.int/publications/items/7769249005927</a> "감정을 생각하나 감정에 이름을 붙여본다" 예를 들어 "여기 힘든 감정이 있다." "여기 가슴의 답답함이 있다." "여기 분노의 감정이 있다." "여기 과거에 관한 고통스러운 생각이 있다." "나는 여기 힘든 생각이 있음을 알려자란다." "나는 여기 자에게 대한 두려움이 있음을 알려자란다."
	나 위로해주기	1. 실책나 실수에 대해 자세히 적기 2. 그 일을 겪은 나를 사랑하는 친구라고 생각하며 위로 편지 쓰기	<a href="https://www.bbc.com/yourlife/article/20210111-self-compassion-not-self-esteem-leads-to-success">https://www.bbc.com/yourlife/article/20210111-self-compassion-not-self-esteem-leads-to-success</a> <a href="https://self-compassion.org/safeself-compassion-worksheets">https://self-compassion.org/safeself-compassion-worksheets</a> <a href="https://dshab.fes.harvard.edu/self-compassion">https://dshab.fes.harvard.edu/self-compassion</a>
	화 먹는 요령	1. 화가 나거나 스트레스 받을 때 자기감정을 솔직하게 적는다. 2. 적은 감정을 요령이 되어지듯.	- <a href="https://dshab.fes.harvard.edu/compassion-worksheets">https://dshab.fes.harvard.edu/compassion-worksheets</a> "감성노동 스트레스 완화, 관리방안스디서" "화가 남을 때 자중에 두지 말고 글을 쓰거나 낙서를 하는 등 자기감정 표출 불가치한 스트레스는 받아들이고, 즐겁고 열심히 일하도록 긍정적 사고 갖기"
없었다더라면?	한 웃 차이	1. 지금 삶에서 좋은 일, 감사한 점 3가지 적기 2. 그 중 하나가 없는 상황을 상상해보기 3. 그 하나가 없을 때 어떻게 대했을 수 있을지, 또다른 감사하고 좋은 점 적기	- According to Koo, Apoon, Wilson, & Gilbert (2008) "It's a wonderful life. Mentally subtracting positive events improves people's affective states, contrary to their affective forecasts." "긍정적인 사건에 존재해 대해 적극적으로 생각하는 것보다 긍정적인 사건을 상상적으로 제거한 후에 정서적 상태가 더 크게 개선 당연하게 여기는 것을 적어고 감사함을 높이도록 돕기 1) ask the client to think about something good in their life right now 2) take a moment to imagine what life would be like without that one good thing 3) write down the ways in which their life would be different without this one good thing
	다르게 생각해보기	1. 자신에게 일어나는 부정적인 일과 생각을 판단과 결과로 적기 2. 판단한 남기고 결과를 그림자만 나는 어떤지 가차있고 소중한 사람이라 보	<a href="https://self-compassion.org/open-size-5-changing-critical-self-talk/">https://self-compassion.org/open-size-5-changing-critical-self-talk/</a> "마음속에서 5분, 자신감 되찾기 워크북"
	나 잘했지?	1. 감성노동자들이 자주 내뿜는 부정적인 표현 중 하나를 (연립으로) 캐치타기 2. 캐치타기에 긍정적인 용어의 말을 적어 보내기	- "때문에, 그래서의 사고로 자신을 받아내리는 행동을 반복하는 사람은 자신을 사랑하기 어렵습니다. 반면 자신을 사랑하는 사람은 "일자리도, 그함에도 불구하고 자주 사용합니다. 이는 불쾌한 의적인 것들과 나를 분리시킴으로써 좀 더 낙관적이고 현실적인 생각을 하게 만듭니다. <a href="https://dshab.fes.harvard.edu/compassion-worksheets/signature-strengths-and-weakness-evidence">https://dshab.fes.harvard.edu/compassion-worksheets/signature-strengths-and-weakness-evidence</a> "만약보건원(2018). 감성노동 및 직무스트레스 관리.pdf"와 "자기감정 용서하기 및 긍정적 자기에 대해" 예를 들어 프리랜서에게만 다가오는 데 작업이 된다. "실제적 거야"라는 말 대신, "어렵겠지만 난 할 수 있을 거야"라고 말한다.
내 나/ 시그니처 감정	나 잘했지?	1. 어떤 내가 가지고 있는 업무 능력들을 세가지 적는다. 2. 그 중 하나를 선택하여 이 감정을 잘 활용하기 위한 계획, 다짐을 적는다	- "만약보건원(2018). 감성노동 및 직무스트레스 관리.pdf" "Exercise 14: The Signature Strengths Action Plan" 참고 According to Seligman (2018), one of the most effective ways to develop and enhance signature strengths is to identify one target strength, set a specific and measurable goal related to that strength, and devise a concrete action plan to achieve the goal." 가능한 자기 (possible self) → 현재는 현실적 자기에 불만족을 품은 하나라도 이상적 자거나 의무적 자기와 차이가 있다 하더라도, 자신이 노력하면 그러한 기쁨에 도달할 수 있다는 자신감과 자기효능감이 있 으면 불만을 품은 현실적 자기에 대해서도 이상적 자거나 의무적 자기에 도달할 수 있다고 느낄 때는 화를감과 화를감에 대해 심해짐
	내 나/ 시그니처 감정	1. 오늘 할 해낸 것 세 가지를 적는다. 2. 스스로를 칭찬해준다. 3. 그동안 작은 목표를 돌아본다.	- "만약보건원(2018). 감성노동 및 직무스트레스 관리.pdf" "자신감의 부족을 보완하는 전략에는 실재하는 것들을 배우는 경우가 많다. 그러나 때로는 '적지않게도 성공에 초점을 맞추는 게 도움'이 된다.
	나 잘했지?	1. 내 할봉에 어난내 나에게 화를 내는 경우, 명예 보장을 움직인다. 2. 명예 보장이 남아오는 노력들을 막으며 나를 지켜준다.	(1) 의무적 사소한 거라도 일상 속에서 잘 해는 것을 전부 적어본다. "할을 잘 해준 소화를 잘 처리 / 관을 잘 잘 / 자리를 꼭지 않음 ..." (2) 결과를 자랑스카워 하는 이유도 생각해보자. PDI 상담 매체에서 가변, 전상 고객이 화를 내는 이유가 상담 본 내용에 있지 않은 경우, 상대의 화가 자신을 향한 것이 어남을 인지하고 그 상황에서 본인을 분리시키는 것이 효과적이다.

Screenshot of the list of intervention design references

MindBattery UX/UI Design

- We designed the UX/UI of MindBattery by using Figma. Also, some interaction of interventions were designed by After Effects.



Screenshot of Figma work space

UX/UI DESIGN

The battery value will automatically decrease slightly from the value recorded by the user.

Home

20 Jan

Finish

You are **Tired** now !

31%

Record Emotion

Charge Energy

I need to recharge your energy!  
How about checking your mind and taking a break?

Home

Report

My Info

X

LABEL YOUR EMOTION

How is your state of mind now?  
Choose the most similar emotion.

I'm Fine

I'm Angry

I'm Depressed

I'm Anxious

Next

<

IDENTIFYING

Choose all factors that affected your emotion.  
And express emotion and thinking in writing.

\*Selecting Tag is Required(Multiple chose)

Workload

Customer Relationships

Job Performance

Workplace Relationships

Non-Work-Related

Not Sure

Express your emotion and thinking to text

Next

<

EXTERNALIZING

Express your state of mind  
as the amount of battery.

I'm **Calm** now.

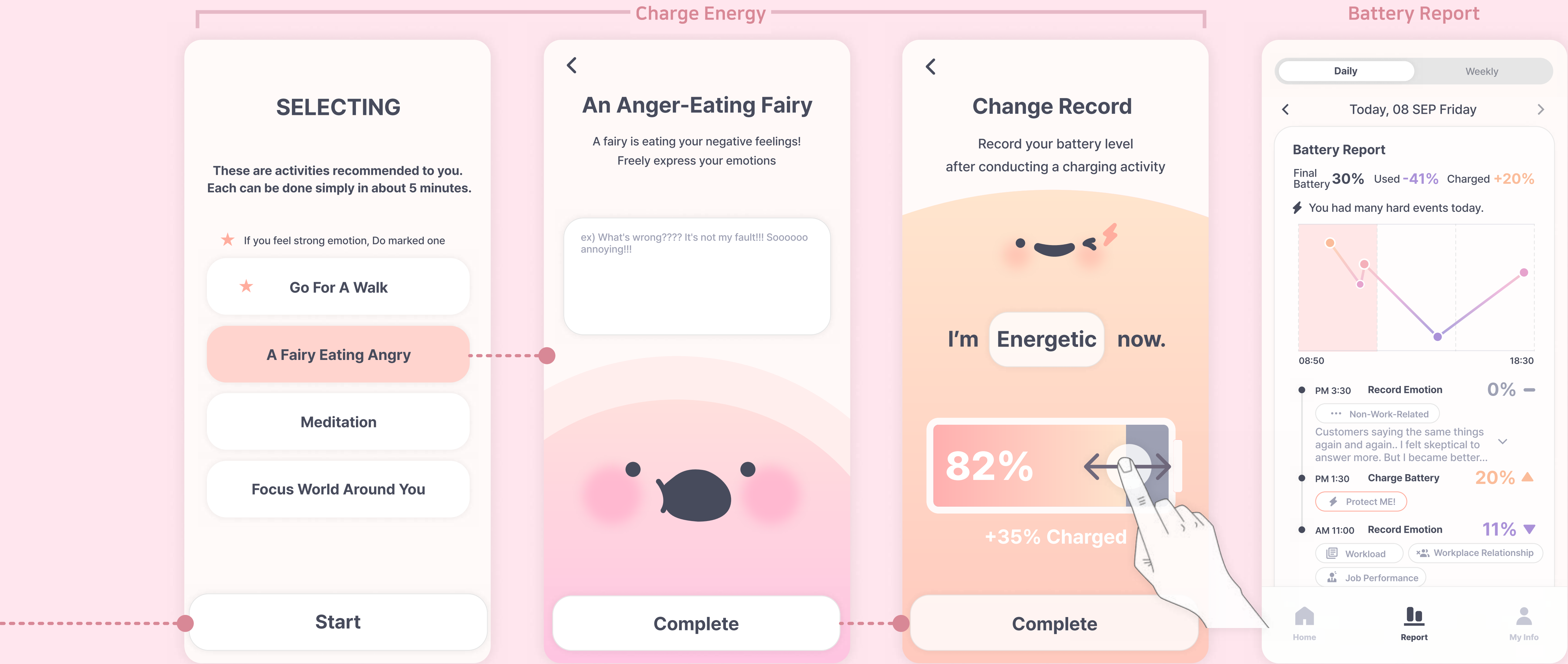
47%

Charge later.

Charge Energy

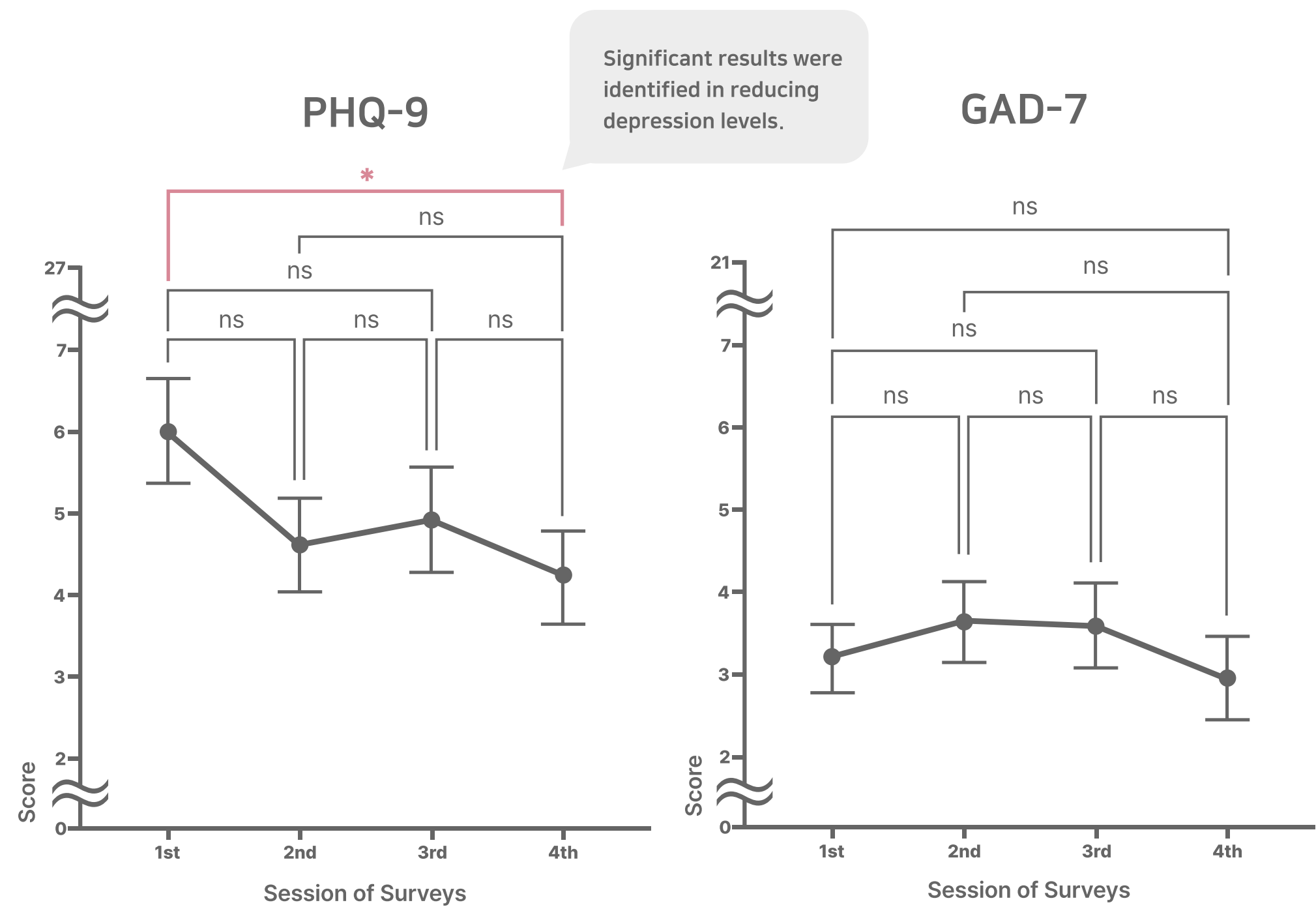


UX/UI DESIGN



# RESULTS

## Impact of MindBattery on Users' Emotional Wellbeing



@ Results of four surveys collected during the experiment - RM ANOVA analysis and Tukey's HSD post-test

## Helpful to Recognize and Regulate Emotional States

"Looking at the battery level made me **reflect on my emotion more often.**"

P29

"If the battery level shows low, I tried to **conserve my mental energy** for the rest time."

P25

"I usually think I'm exhausted by 4 p.m., but one day I saw my battery level was higher than I expected, so I thought, '**I still have some energy left.**'"

P14

### Effect on an emotional recovery

"I couldn't go to take a break since it increased the workload for the others, but with this app, I could **take a break where I was sitting.**"

P26

"Writing down why I was upset made me feel better. So I could tell myself to '**cheer up,**' and I boost my battery level."

P36

@ Quotations from interview



# RESULTS

## Limitations and Improvements

### Work Environments Where Difficult to Use Mobile Phones

Some users felt it hard to use app in their phones since their work performance is continuously tracked. It is necessary to let call center workers also use MindBattery on devices they frequently interact with during work, such as monitors.

### Differences in Utilization Based on Workload

During the field study, some call centers were in peak season—participants who experienced a sudden increased workload felt burdened by using MindBattery. MindBattery needs to be improved to be applied to those in hectic situations.

### Integration with Biometric Data

Self-reporting has the advantage of being a reflective process, but it is challenging for people who are not good at expressing emotions. Exploring alternatives, such as combining self-reported data with biometric data collected from wearable devices, is necessary.