User Testing Procedure

1. **Welcome and explain our project**
2. **Confirm consent** 【How?】
3. **Guideline and rules**
4. **Let the subject to view the 2D or AR condition** (half do 2D first, half do AR first)【◀audio record】
   - _control the order_. e.g., if you have shown the mobile version first to one participant, you should show the AR version first to the next participant.
5. **Finish the Empathy Scale and the card-sorting questions**【◀audio record】
6. **Let the subject to view another condition**【◀audio record】
7. **Finish the Empathy Scale and the card-sorting questions** 【◀audio record】
8. **Finish final Interview question** 【◀audio record】
9. **Thanks and compensation**

Devices and Materials
1. A mobile phone installed with AR + 2D version (figma)
2. A device to do audio recording
3. A software to transcribe audio - Otter
4. Print cards for card-sorting

More details 👇

I. Welcome & Introduction

Introducing moderator

Script:

Hi <Participant name>,

How are you doing today? Thank you for taking the time to talk to us today!

My name is <Interviewer name>. Today I would love to hear your thoughts and input on the health application: "Grow with me". In the Grow with me application, you can adopt and take care of a virtual dog in an AR view, using your personal health data. For example,your step count will impact the AR dog's exercise level and your water intake will be your AR dog's water intake and so on.

Just to confirm, we'd like to keep this session to 20-30 minutes. As we are currently in the proof-of-concept prototype stage, we'll use the feedback we get from you and other participants to understand the user experience and improve the prototype. So please share your honest thoughts as we go along. Do you have any questions for me before we get started? [wait for reply] Great.

II. Confirm Consent

Script:

Before we begin, could I just confirm that you're still okay with this session being recorded? We will only be using the collected data for our study purposes and will not share them with anyone outside of our research team. [Wait for reply] Awesome! I will start the recording now.
- (1) voice recording
- (2) video recording

III. Guidelines and Rules

Establish expectations for the session / Tasks briefing

Script:

Thanks. Now I'm going to ask you to use this application. It's really important to know that we are only testing the application, not you. You can't do or say anything

wrong here. Please feel free to let me know at any time if there's something you like, dislike, if you're confused, etc. Also, I'd like you to "think aloud" as much as possible. By that, I mean that I'd like you to speak your thoughts as often as you can. For example, you can describe what you see and feel while using the application. Do you have any questions so far? Ok, Let's get started. For example, you may see something you didn't see before and want to interact with it. In that case, saying something like "this caught my eye so I'm going to see what it is" would be very useful. If at any point you have questions, please don't hesitate to ask. Do you have any questions so far? Ok, Let's get started.

IV. Task - AR condition (swap condition for next user)

Script: First, you will interact with the AR version of the 'Grow with me' application

[If the user does not interact with the dog, nudge the user by referring the "Interaction Guide"]

Please show the figma interface before the AR

First click [icon] **to show the statistics**

Second click [icon] **to show dog's mood**

Third, open AR app one by one.
1. Imagine you have reached 100% of your daily exercise or health goal and open the application to see this dog's behavior and reaction.
   a. App: S5-Jump
   b. Interaction Guide: Use the camera to point at the dog and move around; the dog will always be facing you (simulate how the dog wants to play with you)
2. Now imagine, on the next day, you have only reached 80% of your daily health goal and open the application to see this dog's behavior and reaction.
   a. App: S4-Tail
   b. Interaction Guide: Touch the dog's nose, the dog will wag its tail.
3. Now imagine you have only reached the 60%, what will your dog do?
   a. App: S3-Sit
   b. Interaction Guide: Drag the ball on the floor and give it to your dog, your

dog will have no reaction because it doesn't want to play with you.

4. Imagine on the fourth day, you only reached 30% of your goal, then open the application and check your dog's behavior.

   a. App: S2-Bark

   b. Interaction Guide: User needs to turn the body. When the user looks at the dog, the dog barks. When the user looks away from the dog, the dog stops barking.

5. Finally, imagine you have only reached 1% of your goal, open the app and check your dog's status.

   a. App: S1-Refuse to Eat

   b. Interaction Guide: User needs to drag the food to the dog.

   [If the user forgets to think aloud, encourage him/her to do so by saying:
   - What just happened?
   - What can you do here?
   - What caught your eye?
   - What kind of emotion is the dog feeling?
   - What kind of emotion are you feeling?
   - Is that what you expected to see?]

After all the scenario
Script:
Now we're going to ask you to fill out this survey
[wait for the subject to fill out]
Great! we're going to do a fun mini task before we move onto the next condition
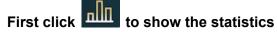
[**Link to card-sorting**]

Script:
Here are the cards with different dog behaviors. Please rank these cards based on the strength of the emotional connection you felt towards each behavior.

   ○ Could you explain why you ranked in this order?

   ○ For this behavior, you felt the strongest/weakest/stronger/weaker connection to the dog. Could you explain the reason why you felt that way?

Please take the Emotional Attachment Scale (for AR)

V. Task - 2D condition

on Figma- long press with two fingers to switch

First click [icon] **to show the statistics**

Second click [icon] **to show dog's mood**

Third click [icon] to show the dog.

Script: Now you will interact with the 2D version of the Grow with me application.

1. Imagine you have only reached 1% of your daily exercise or fitness goal and open the application to see this dog's behavior and reaction.
   a. Figma: Choose Flow - Scale 1
2. Now imagine, on the next day, you have only reached the 30% of your daily health goal and open the application to see this dog's behavior and reaction
   a. Figma: Choose Flow - Scale 2
3. Now imagine you have only reached the 60%
   a. Figma: Choose Flow - Scale 3 Sit
4. Imagine you have reached 80%
   a. Figma: Choose Flow - Scale 4
5. Finally, imagine you have only reached 100% of your goal.
   a. Figma: Choose Flow - Scale 5

   [If the user forgets to think aloud, encourage him/her to do so by saying:
   - What just happened?
   - What can you do here?
   - What caught your eye?
   - What kind of emotion is the dog feeling?
   - What kind of emotion are you feeling?
   - Is that what you expected to see?]

Script:
[If the user tries to interact with the dog, let the user know about this]
- You cannot interact with the dog in the 2D version.
- You don't need to use the interface.

After all the scenario

Script:

    Now we're going to ask you to fill out this survey again

    [wait for participant to fill out]

    Great! We will again do a mini task before we move onto the interview

[**Link to card-sorting**]

Script:

Here are the same cards with different dog behaviors. Please rank these cards based on the strength of the emotional connection you feel towards each behavior.

- **Could you explain why you ranked in this order?**
- For <u>this</u> behavior, you felt the strongest/weakest/stronger/weaker connection to the dog. Could you explain the reason why you felt that way?

Please take the Emotional Attachment Scale (for 2D)

VI.   Post-Experiment Questions

Script: Ok fantastic. We're done with the task portion of the session. All that's left is just a few questions.

1. The first question is.. between AR and 2D screen conditions, which one did you prefer?
   - [Wait for reply] Why is that?

2. During the user testing, we designed a situation where reaching a different goal level could result in changes in your dog's behavior. In the real app, your health data will be connected to the dog's status.
   - Comparing the 2D version with the AR version, which one was more engaging to interact with?
     - Why is that?
     - (If participants didn't talk about the following in their answer to why, then ask) Which elements of the app do you feel were particularly effective in keeping you engaged?
   - **Comparing the 2D version with the AR version, which one will motivate you to do more exercise?**
     - **Why is that? (90% - AR looks more real, more interactions (whole body interaction, co-presence [standing with a dog, so it motivates them to exercise]) - 10% check anywhere and anytime**

- Comparing the 2D version with the AR version, which one is more likely to help you keep up good habits?
    - **Why is that? (90%)**

3. Are there any challenges you expect to face when using the 2D version?
    a. [If yes] could you please explain? **no**

4. Are there any challenges you expect to face when using the AR version?
    a. [If yes] could you please explain? **More instructions to interact with a dog, AR needs more space [don't want to open AR])**

5. Do you have any suggestions for how we could improve the AR app?
    a. [If yes] what are the suggestions? **[combine, better instructions, better interface to show health data etc.]**
    b. Is there a reason why you want to improve it?

VII Wrap Up
6. Is there anything else you'd like to add?

Script: Thank you so much for your time to participate in our study. We will contact you soon via email to send you the Amazon gift card. Please expect this to take a couple of weeks.

Next step for the researchers

- Upload the voice recording file to the Georgia tech dropbox
- Upload the voice recording to Otter.ai to transcribe
- Upload the picture of the card-sorting results
- Reset the order of the cards for card-sorting [**Link to card-sorting**]