

Usability test for natural language user interface parental controls

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Background and research questions

We are currently in the process of developing features for our natural language user interface (NLUI). Our NLUI is software that can be installed on multiple platforms, including phones, cars, TVs, speakers, and so on. Through third-party APIs, our NLUI is capable of controlling smart home devices.

From our previous research, we have identified that parental controls are a useful and desired feature for our NLUI, especially considering young children and smart home devices. We have begun building such features. Our current method of parental controls primarily uses a passphrase set up by the parent in order to lock their children out of using smart home devices designated by the parent.

In order to plan our future sprints of development, we want to know the following:

What difficulties are there for a parent to set up or remove parental controls for connected smart home products using our NLUI?

What difficulties are there for a parent to check the current parental controls settings for connected smart home products using our NLUI?

In what ways does our NLUI inspire confidence or doubt in parents that it is/will be working as they intended?

Participant population

We are interested in study participants who are parents of young children that live with them, and are already at least somewhat familiar with NLUI and smart home products. We have already scheduled 18 participants for three study sessions in the coming three months, with 6 backup participants (2 for each session).

Our criteria for choosing these participants were as follows:

They are a parent of a child who lives with them at least 2 days of the week. We wanted our participants to have genuine reasons to be concerned about childproofing their home. We set a lower bound at 2 days a week rather than 7 days a week to make sure divorced parents were not unnecessarily filtered out.

The child which lives with them at least 2 days a week is from the ages of 2 to 8, inclusive, and does not have a major speech disability. The difference between a child's capabilities with and without NLUI is probably greatest at these ages where they are not physically as developed, but can speak well enough to operate NLUI.

The parent has used or seen (if you want to be pedantic, heard) someone use a natural language user interface before. We want to make sure that we spend our sessions testing the product, not the users. We would like our participants to be comfortable with the concept of NLUI so that our data will reflect the usability of the product, rather than an unrelated knowledge gap of the user. We have recruited participants with a variety of experiences, from those that have only observed NLUI used a couple times, to those who use it daily.

The parent has used or seen someone use a smart home product before. Reasoning similar to above, but regarding smart home products.

Schedule

Our sessions will be dispersed across the next three months in order to give time for the development team to make significant improvements to the product between sessions. We have already completed a dry run of a session.

January 23–24, 2017 (Mon–Tue): Usability Test 1

February 20–21, 2017 (Mon–Tue): Usability Test 2

March 27–28, 2017 (Mon–Tue): Usability Test 3

Each group of sessions will have 6 participants, spread across two days (3 participants per day).

Day 1

Participant A (8:30–10:30 am)

Participant B (11:30 am–1:30 pm)

Participant C (2:30–4:30pm)

Day 2

Participant D (8:30–10:30 am)

Participant E (11:30 am–1:30 pm)

Participant F (2:30–4:30pm)

An individual session will consist of the following activities:

Buffer time for unexpected difficulties (30 min)

Greetings and consent form (up to 5 min)

Introduction (up to 5 min)

Preliminary interview (5–10 min)

Evaluation instructions (up to 5 min)

Task 1: Adding parental controls to a device without a passphrase already set up (10–15 min)

Task 2: Adding parental controls to a device with a passphrase already set up (5–10 min)

Task 3: Checking the current parental controls settings (5–10 min)

Task 4: Removing parental controls from a device (5–10 min)

Free play (5–10 min, optional)

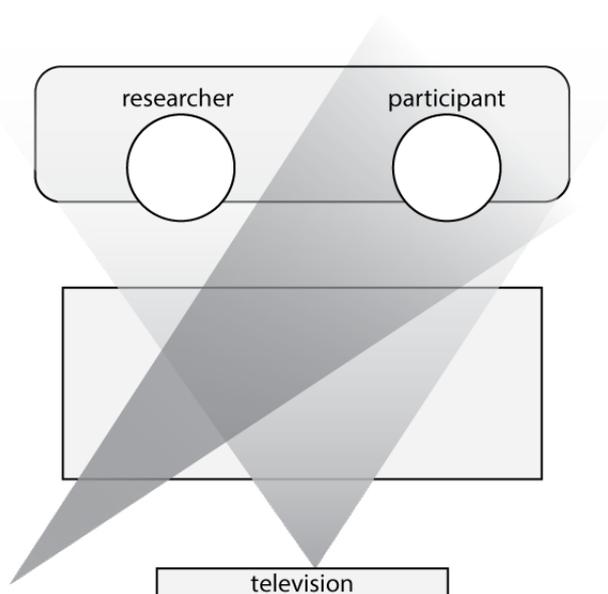
Conclusion and gratuity (5–10 min)

Setup

We will be using our “living room” usability lab for this usability test. The participant and researcher will be both sitting on the couch during the session. The NLUI will give feedback to the participant through the home theater speakers.

We will be recording via the hidden cameras in the room, which will be livestreaming to observers in our observation room. We will have one camera framing the knees-up of the participant and researcher from the “perspective” of the TV. Another camera will be focused on the participant from the shoulders-up, from a 45-degree angle.

The observers can speak to the researcher through their earpiece if needed.



Usability interview

Introduction

up to 5 min

“Thanks for joining us for this study session!

“I’m [researcher name], and I’m from [company]’s research and development department. My role is to help our company understand how well their products work for our customers.

“Before we start, do you need anything to drink or to go to the restroom?”

“If you would like to take a break or end the session at any time, you are free to do so. Just let me know.

“We’re going to be recording our time here on camera. There are two cameras, one over by the TV, and one in the corner. Two of my colleagues will be in another room nearby watching us interact with the product. They are taking notes so that I can focus on interviewing you.

“The video and livestream are just for analysis, and won’t be used for promotion or publicity. It will only be seen by my research team and a few members of the development team.

“Please read and sign this consent form. Let me know if you have any questions.”

Have participant sign the consent form.

“Is it alright if we start recording right now?”

Start recording.

“Today you’re going to be testing our voice interface we’re building. It’s still in its early stages, so not everything may work exactly the way it should.

“I want to make sure you know that we’re testing the product, and not you. Any difficulties you may have in using the product is not your fault; there’s nothing you can do that’s “wrong” in this session. Feel free to be open and direct with your opinions and feelings, both positive and negative. My colleagues and I didn’t make this product, so you’re not going to hurt our feelings. Does that make sense?”

Preliminary interview

5–10 min

“I’d like to start out by asking you some questions about your experience with voice interfaces and smart home devices.”

Questions:

When was the last time you remember using or seeing someone use a voice interface?

How much do you use voice interfaces?

[If often] **What makes them appealing to you?**

[If not often] **Why is that so?**

When was the last time you remember using or seeing someone use a smart home device?

Do you own any smart home devices?

[If yes] **Which ones? What makes them appealing to you?**

[If not often] **Why is that so? Do you plan on buying one in the future?**

Is there anything in your house you currently childproof?

Do you remember the last time your child used an appliance, device, or furniture in a way you didn’t want them to?

Observers:

Take notes about the participant’s experience with voice interfaces and smart home devices. If possible, try to put them on a spectrum compared to previous participants.

Evaluation instructions

up to 5 min

“I’m now going to ask you to do some tasks using our voice interface. The voice interface has a microphone in this room, and will respond to you through the speakers. Our voice interface is activated by the special phrase [special phrase]. Since we haven’t turned on the voice interface yet, nothing happened. Once I turn it on, it will respond to [special phrase]. Does that make sense?”

“I’m going to direct you to do some tasks. Please let me know if any of my directions are unclear. Before each task, I’m going to ask you how difficult you think the task will be, on a scale from 1 (very easy) to 5 (very difficult).

“When you’re doing each task, please tell me out loud what you’re thinking or feeling. If you’re confused or surprised, let me know. Remember, we’re testing the product, not you. The product is the one that is making any mistakes today.

“When you feel like you’ve completed the task, please let me know. Do you have any questions?”

Task 1: Adding parental controls to a device without a passphrase already set up

10–15 min

NOTE: This task is basically a compound task, since they are starting from scratch and will be led by the voice interface through the passphrase setup process in order to set up their first parental controls. We are doing it this way in order to test whether our product explains the concept of a passphrase in a way that makes sense. If we remove or greatly alter the passphrase feature between groups of sessions, we will have to adjust this task.

“In your house, you have lights, blinds, a television, and robot vacuum that you can control using the voice interface. However, your child can also control these devices using the voice interface. I’d like you to use the voice interface to set parental controls so that your child cannot access one of these products of your choosing with the voice interface.”

“On a scale of 1 to 5, how difficult do you think this will be?”

“Why did you give it that rating?”

“Alright, you can go ahead and set the parental controls. Please let me know when you feel like you have completed the task. Remember, the special phrase is [special phrase].”

Turn on the voice interface.

If they are having difficulty with the concept of a passphrase:

Are you confused about what the voice interface is asking you to do?

How would you get help with this topic?

Suggest that they ask the voice interface for help.

Remind them that the product is the one making the mistakes, not them.

Once they have successfully created a passphrase:

Can you describe what you just did?

What purpose do you think it has?

Do you feel like it will be effective?

“Interesting. Please continue with the task.”

Observers:

Record difficulty rating for Task 1:

Reasoning:

Observers:

Record any difficulties with setting up a passphrase:

Observers:

Note any “incorrect” concepts of passphrases:

Once the task is done:

“Do you feel like you’ve finished setting up parental controls for a product?”

“Now that you’ve completed the setup, how difficult did you find the task, from 1 to 5? Why?”

“On a scale from 1 to 5, how confident do you feel that the voice interface did what you intended for it to do? What indications from the interface did you have or not have that gave you such confidence/doubt?”

Task 2: Adding parental controls to another device with a passphrase already set up

up to 5 min

NOTE: We test this task in order to isolate the process of setting up parental controls from setting up a passphrase.

“For the next task, I’d like you to add parental controls to another device. To remind you, there are also lights, blinds, a television, and a robot vacuum accessible by the voice interface. [leave out the device they have already set up]

“On a scale of 1 to 5, how difficult do you think this will be?”

“Why did you give it that rating?”

“Alright, you can go ahead and set the parental controls. Please let me know when you feel like you have completed the task. Remember, the special phrase is [special phrase].”

Once the task is done:

“Do you feel like you’ve finished setting up parental controls for a product?”

“Now that you’ve completed the setup, how difficult did you find the task, from 1 to 5? Why?”

“On a scale from 1 to 5, how confident do you feel that the voice interface did what you intended for it to do? What indications from the interface did you have or not have that gave you such confidence/doubt?”

Observers:

Did the participant complete Task 1?

Rating for difficulty post-task:

Reasoning:

Rating for confidence in task completion:

Reasoning:

Observers:

Record difficulty rating for Task 2:

Reasoning:

Observers:

Did the participant complete Task 2?

Rating for difficulty post-task:

Reasoning:

Rating for confidence in task completion:

Reasoning:

“On a scale from 1 to 5, how confident do you feel that the devices are childproof from your child using the voice interface? Why?”

Observers:

Rating for confidence in childproofing:

Reasoning:

Task 3: Checking the current parental controls settings

5–10 min

“Let’s pretend a few days have gone by, and you want to remind yourself what parental controls you already have set up. For the next task, you’re going to check what parental controls you have set up.”

“On a scale of 1 to 5, how difficult do you think this will be?”

Observers:

Record difficulty rating for Task 3:

Reasoning:

“Why did you give it that rating?”

“Alright, you can go ahead and check what parental controls you have set up.”

Once the task is done:

“Do you feel like you’ve finished checking what parental controls you have set up?”

Observers:

Did the participant complete Task 3?

Rating for difficulty post-task:

Reasoning:

“Now that you’ve checked what parental controls you have set up, how difficult did you find the task, from 1 to 5? Why?”

“On a scale from 1 to 5, how confident do you feel that the voice interface did what you intended for it to do? What indications from the interface did you have or not have that gave you such confidence/doubt?”

Rating for confidence in task completion:

Reasoning:

“Now that you know that you can check what parental controls you have set up, on a scale from 1 to 5, how confident do you feel that the devices are childproof from your child using the voice interface? Why?”

Rating for confidence in childproofing:

Reasoning:

Task 4: Removing parental controls from a device

5–10 min

“Let’s pretend your child has become capable and responsible enough to use one of the devices you’ve set parental controls for, and you want to remove those parental controls. For the next task, you’re going to remove parental controls from any product you’ve already set parental controls for.”

“On a scale of 1 to 5, how difficult do you think this will be?”

“Why did you give it that rating?”

“Alright, you can go ahead and check what parental controls you have set up.”

Once the task is done:

“Do you feel like you’ve finished removing parental controls you previously set up?”

“Now that you’ve removed parental controls you previously set up, how difficult did you find the task, from 1 to 5? Why?”

“On a scale from 1 to 5, how confident do you feel that the voice interface did what you intended for it to do? What indications from the interface did you have or not have that gave you such confidence/doubt?”

“On a scale from 1 to 5, how confident do you feel that the parental controls themselves are childproof from your child? Why?”

Free play

5–10 min (cut if time is running short)

NOTE: This portion is simply to discover new perspectives and/or any blinds spots we might have about our product.

“We’re almost done. For the next few minutes, we’d like you to fiddle around with the parental controls any way you’d like. Remember, this is an early build of the product, and it’s likely that you’ll run into some missing features.

“Please let me know out loud what you’re attempting to do before you say the special phrase. This will help me understand what’s going on.”

Observers:

Record difficulty rating for Task 4:

Reasoning:

Observers:

Did the participant complete Task 4?

Rating for difficulty post-task:

Reasoning:

Rating for confidence in task completion:

Reasoning:

Rating for confidence in childproofing:

Reasoning:

During the free play:

Why would you want to do that?

Did the voice interface respond in the way you hoped it would?

Observers:

List things that the participant attempts to do with the voice interface, along with any difficulties, errors, or missing features:

Conclusion and gratuity

5–10 min

“To conclude, I’d like to ask you some questions, and then we’ll be done.”

Observers:

Be sure to let the researcher know through the earpiece if there are any other questions you’d like to ask.

If you had to explain the product to someone else, how would you explain it?

What are the most memorable positive parts of your experience today? Most memorable negative parts?

If you could change anything about the product, what would you change?

Would you prefer using another method to set up parental controls? If so, what would that method be?

Do you think these parental controls are worth setting up? Why or why not?

Today, we asked you to simply put a “lock” on individual products. We plan to give you finer control over access than just “on” and “off”, such as curfew hours for watching television. Are there any ways you’d like to have finer control childproofing smart home devices (if you owned them)?

What are your feelings and impressions overall?

“Thank you so much for your time today! Here is your compensation. Please sign this form to acknowledge that you’ve received it.”

Give the participant gratuity and have them sign the form.

Consent agreement

I volunteer to participate in a research project conducted by representatives from [company].

My participation in the study activities are voluntary.

I understand that I will be compensated \$200 for my participation. I may withdraw and discontinue participation at any time without penalty. If I feel uncomfortable in any way during the study session, I have the right to decline to participate fully in any activity or to leave the study session, knowing that my compensation will not be reduced in such an event.

Participation involves an interview with a representative from [company]. Participation also involves semi-directed tasks using the in-development product from [company].

A video recording and livestream of the session will be captured, and I give my consent to be recorded. I understand that the livestream will only be broadcasted to representatives from the company for the duration of the session.

Notes will be written about me during the study session. I understand that the researcher will not identify me by name in any reports using information obtained from this interview, and that my confidentiality as a participant in this study will remain secure. Subsequent uses of records and data will be subject to standard data use policies which protect the anonymity of individuals and institutions.

I have read and understand the explanation provided to me. I have had all my questions answered to my satisfaction, and I voluntarily agree to participate in this study.

Name:

Signature:

Date:

Participant gratuity release

I acknowledge that I have received \$200 from the representatives of [company] for my participation in their study on the date written below.

I acknowledge that I have been given the appropriate contact information should I have any concerns about the study, the third-party childcare services provided (if applicable), and/or the gratuity.

Name:

Signature:

Date: