

# Simbiotic: Low-fi Prototyping & Pilot Usability Testing

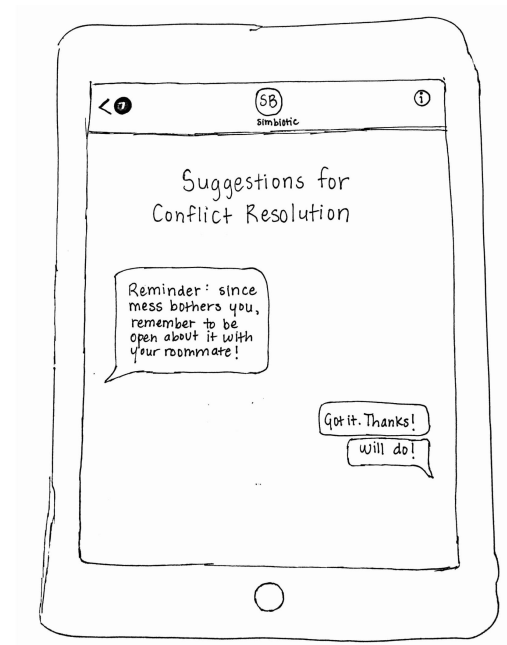
Anjini K., Ellen R., Vrinda V., Yuguan X.

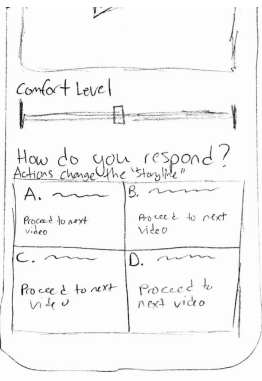
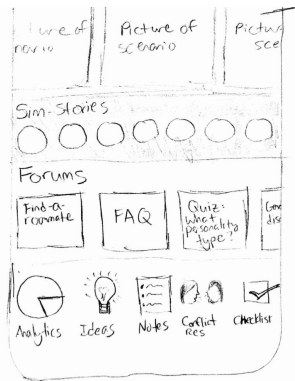
## 1. Introduction

Our value proposition is “Live better, together.” The problem we observed from our own experiences and from previous interviews is that a lot of people do not know about their living preferences until they share a living space with someone else, which contributes greatly to roommate conflicts. We want to have a tool with which our users can understand their real attitudes towards various problems that might emerge during room sharing **before** they live with a roommate, so that they can 1) choose people with similar / complementary living preferences as roommates or 2) articulate their thoughts more effectively if conflicts occur. The solution that we came up with to address this issue is to simulate different roommate situations, both to help people introspect and also to generate a report of their attitudes through AI-based analysis of their reactions.

## 2. Sketches

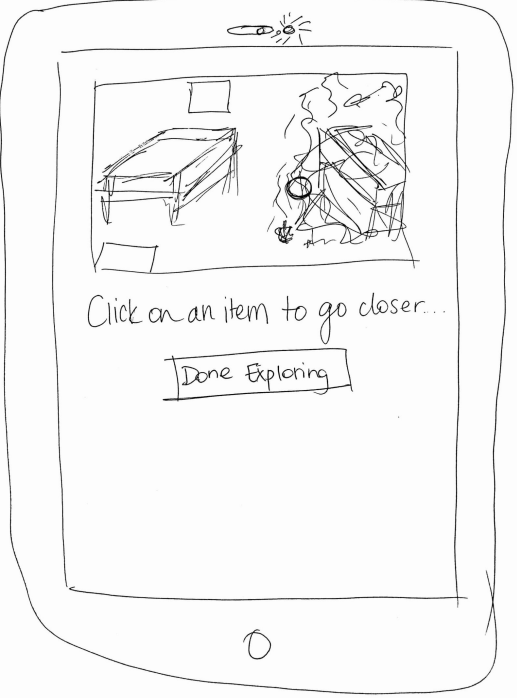
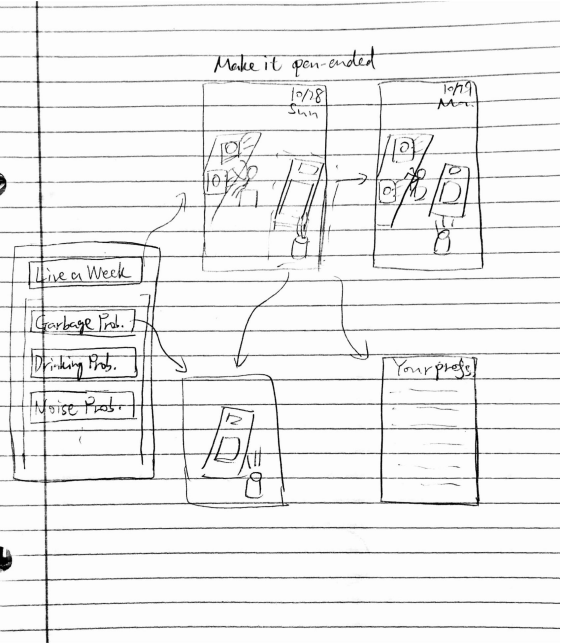
Thumbnails of our initial sketches. We explored very different modalities: video interfaces, full VR, AR, text-based, etc. Sample sketches below:





10% neatness  
25% partier  
5% Early bird  
40% Quiet study  
20% socialite

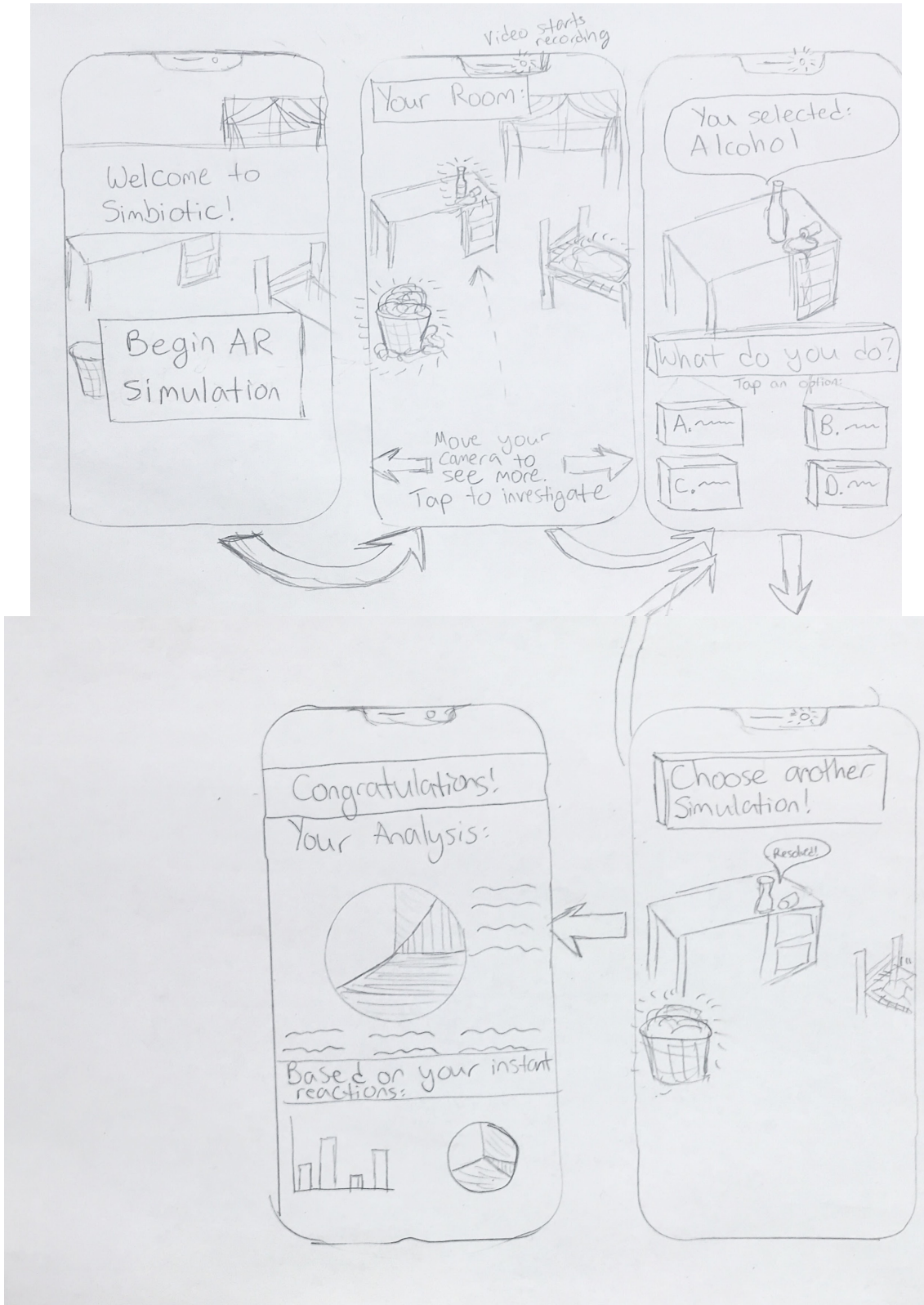
We Recommend:  
A roommate with:  
- Type B tendencies  
- ISFP Myers-Briggs  
- < 40% partier



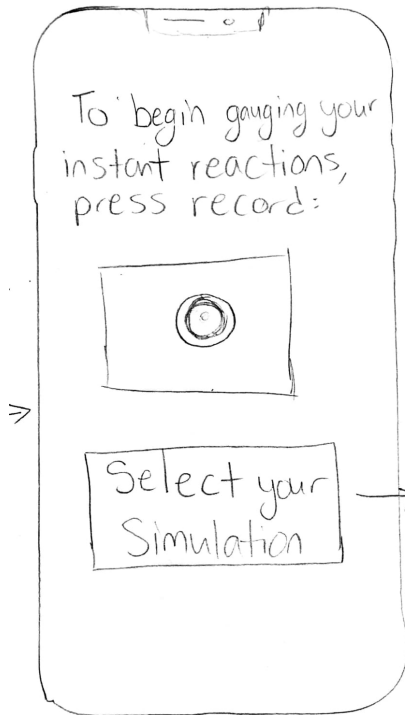
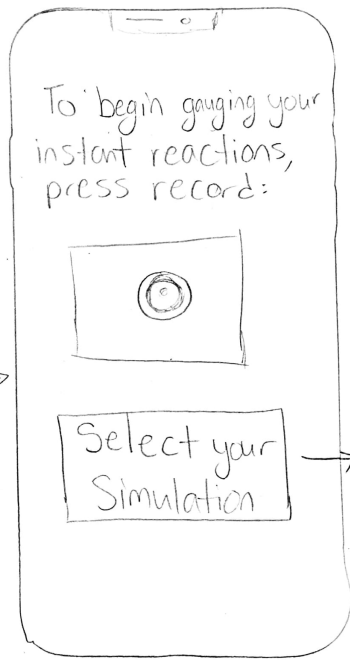
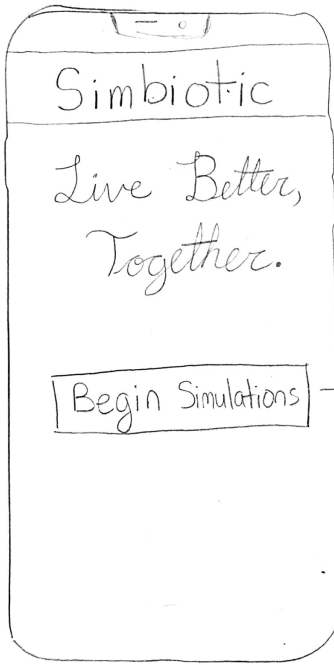


Hi! It's Sim here!  
According to your  
reaction to the messy  
roommate experience,  
I think you'd be a  
4 on this question!

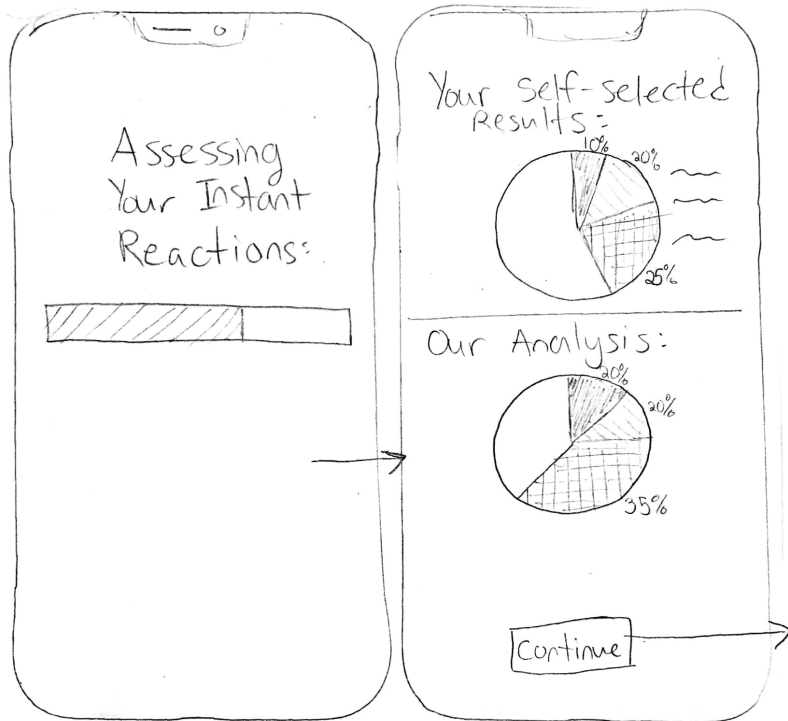
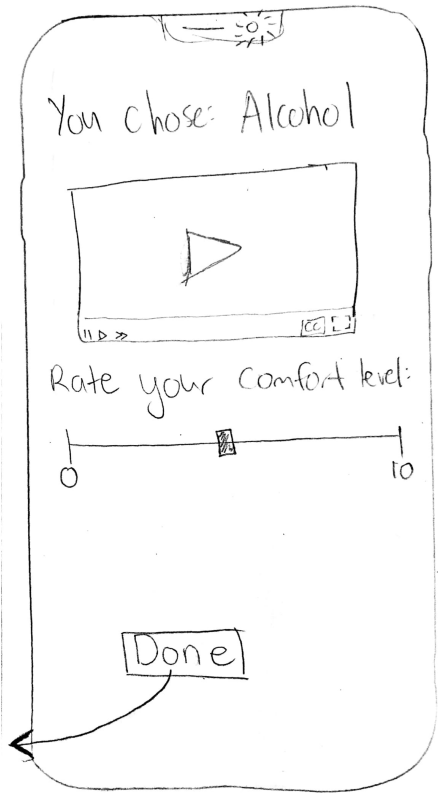
# Storyboard 1

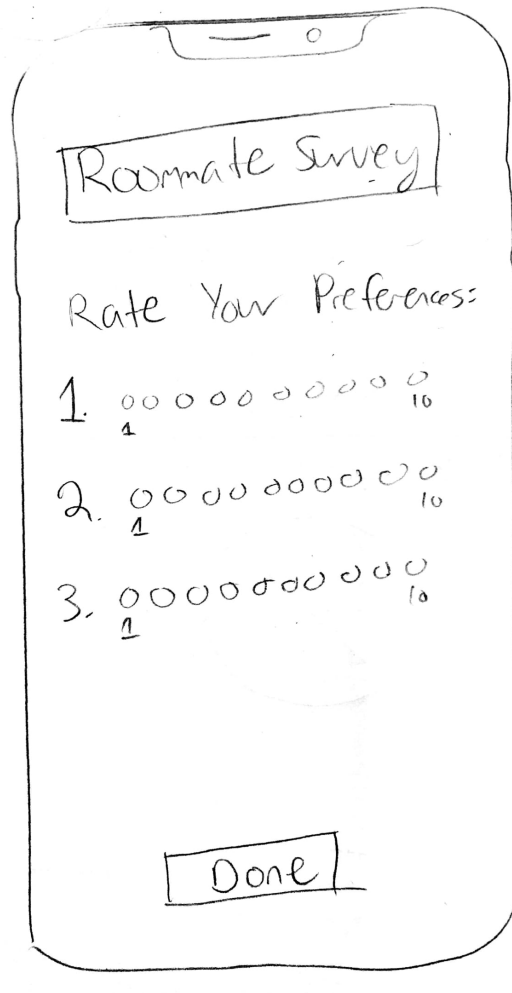


## Storyboard 2



Proceed to  
"Assessing instant  
reactions"





Storyboard 1 represents an AR prototype. The user can look through their phone camera and see simulated roommate situations, then tap on each of them and choose their reaction. During the entire time, the front camera is recording their reactions as well. The eventual analysis would be based on both their unconscious reaction and their explicit decisions.

Storyboard 2 represents a video-based prototype. We provide a platform of pre-loaded roommate situations for the user to pick from and after watching the videos they decide their comfort level. Essentially, this serves as a module before filling out the roommate preference form.

### 3. Selected Interface Design

Design 1: Video-based interface

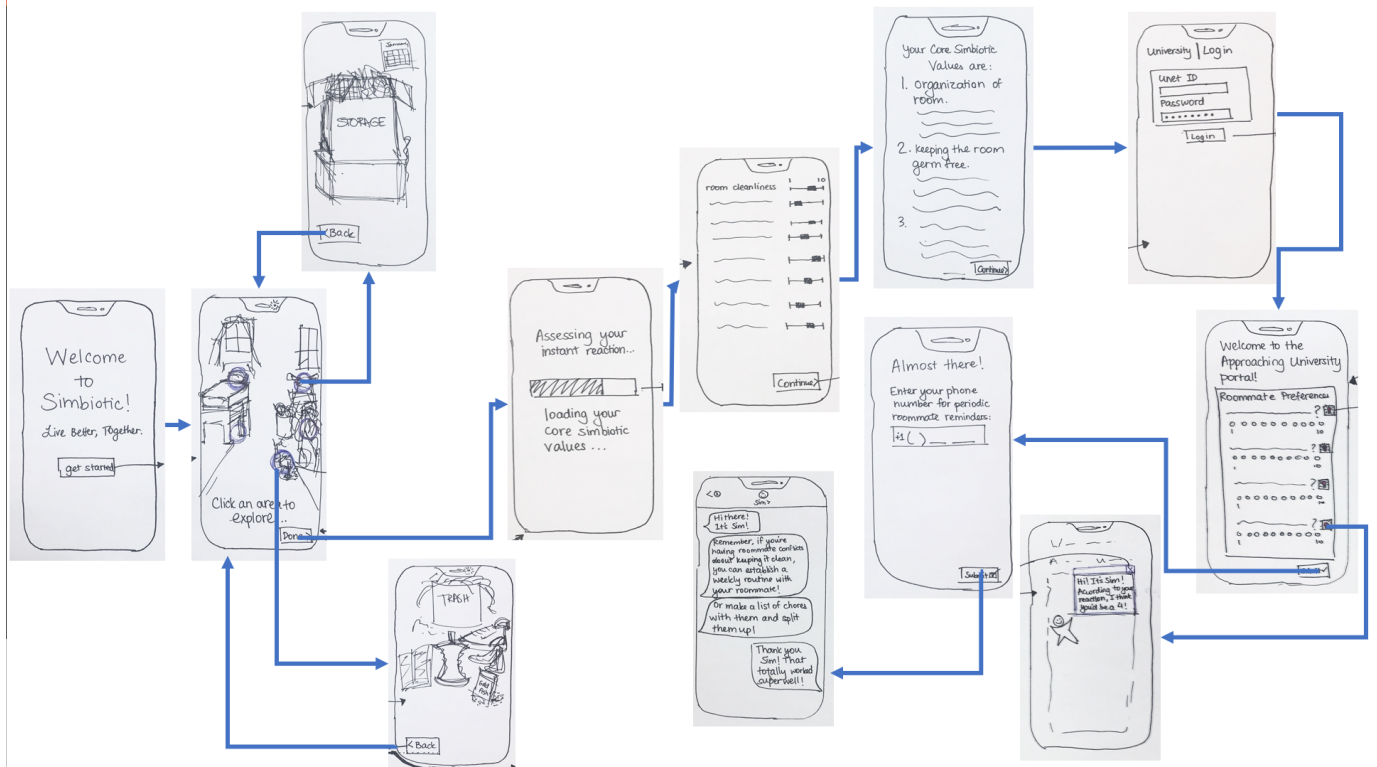
Pros	Cons
Simplicity and convenience: the user is likely already familiar with a YouTube-like, text-and-video interface	Not as immersive of an experience as modern technology enables
Ability to easily rewatch clips or watch parts of clips without investing extra time or effort	Not engaging: user attention is easily diverted and simulation purpose is lost
Ability to share experience with friends much more easily	Not too different from YouTube vloggers

Design 2 (Our chosen design): Augmented reality (AR) interface

Pros	Cons
More immersive experience so user feels involved instead of detached with regards to situation presented	Difficult to implement a system that looks completely realistic
Able to better capture the user's real reaction to situations presented since the user is not merely observing as an outsider	Hard to include others and share simulation experience
More unique than other existing platforms; would stand out as something different for the user	Difficult to use on basic phones (requires some advanced technological capability)
User might associate AR as being more like a game than just another thing to sit through → more engaging	



## Task Storyboards:



## 4. Prototype Description

Our prototype involved a mixture of simulated augmented reality and paper screens representing an app. When the user began the “AR”, we handed them a phone with the camera app pulled up and had them explore the room looking through the camera. Once they were done we switched back to the paper app screens.



## 5. Methods

Because our target user group is young people who are seeking to understand and express their living preferences, we had to test our prototype with users ages 17-20. We were able to find one high school senior at Palo Alto High School who was willing and able to test our prototype and who was over 18. In addition, we recruited two Stanford freshmen by knocking on random people's doors to test our prototype. Since it was only for 10 minutes, we did not have difficulty recruiting participants on campus.

We tested the prototype in a dorm room setting. To prepare the AR room, we set up several "scenarios"-- spilled alcohol/red solo cups, a half-eaten apple, a pile of clothes on the floor, a full trash can, and speakers blaring music. We marked each of these scenarios with a post-it note and told the users that their task was to walk us through their thought processes while finding all the post-its.

In testing our prototype, we informed users that their first task was to explore their environment and understand their comfort level with it. When they tapped “begin,” we replaced the prototype with a phone in their hands with the camera app open. This was to simulate the AR experience of looking at the phone camera to see the simulation. Then, they explored the room and talked about what they were seeing and whether they would be okay with that being in their room. Much of this came unprompted: people tended to explain their comfort level or relate the situation to their living style pretty organically.

Then, once they had found all the post-its we went back to using the prototype screen. During this time, one of us filled in their levels on the “your living preferences” page (as seen in the picture, we drew a new slider placement based on each participant’s reactions to the scenarios in the room. They talked us through what was going on, and we observed their reactions.

We all helped set up the room and recruit participants. Yuguan videotaped the entire testing, Anjini and Ellen briefed the participants at the start, and Ellen and Vrinda interacted with the participants during the prototype testing.

## 6. Results

### Critical Incidents:

#### User #1:

- Thought that using AR was cool
- Said that the clothes on the floor was similar to room at home
- Had a very averse reaction to seeing the half-eaten apple on the desk
- Said that the spilled alcohol and beer cans were “definitely not me”
- *Noticed the lightbulbs on the “Roommate Preferences form” screen but it took a while to actually press it → 2*
- *Did not want to give out phone number for receiving reminders. Said that they did not know what it meant → possible 3*
- Said it would be interesting to not only have it be their own room but show scales (you can slide a bar from 1-10 to see what each cleanliness level looks like)

#### User #2:

- Was confused about why the app was going to record their reactions.
- *Was unclear about whether or not the mess in the room was supposed to be their own mess or their roommate’s → 1*
- Did not look through the “AR” camera screen; forgot about holding the app. This may not be a real problem because in reality with AR the simulations would only appear on the phone screen

- *Was confused about the lightbulbs on the "Roommate Preferences form" screen → 2*
- Adjusted their answer to the "roommate preferences" form page accordingly once they saw the "It's Sim" page

User #3:

- Unsure about being recorded visually by the software.
- Made the distinction that the mess could be on the roommate's side of the room and they would be fine with it
- Was surprisingly ok with having a half-eaten apple on the desk
- *Did not spend long on the "Your Living Preferences" screen → 2; needs to be engaging and interesting visually*
- *Did not initially look at the lightbulbs without prompting → 3*
- Was hesitant to give out phone number for receiving reminders
- *Thought the "Your Preferences" screen was a slider that she could move rather than a report → 1.*

## 7. Discussion

As evidenced through their comments, all three of our testers started comparing the scenarios they saw to their own rooms and experiences. This is a good indicator for our project's goal: we are trying to help people understand their own preferences and have a touchstone from which to base their self-evaluations. Two out of three said that it was useful in giving them some amount of comparison to themselves. They also seemed to enjoy exploring the real-life scenarios; one user even remarked that they "would never have thought about" the left-out food but recognized that it actually had happened to them.

Two of the three users expressed some privacy concerns, both of being recorded by the app and of giving away their phone numbers. We could address the latter issue through simply using apps' capability for push notifications, which would negate the need to collect phone numbers. Our prototype also did not offer a button or switch that would turn the instant reaction evaluation on or off, but this could easily be changed. Thus, users with privacy concerns could easily opt out.

There were a few other interface issues; the main one being that none of our users found the light bulb button on the roommate preferences screen intuitive. It seems we should redesign this to make it more noticeable and easy to interpret. Another interface problem is the way we presented the information about their preferences. Our prototype had slider bars to indicate various scales, which did not seem intuitive to people as they wanted to interact with these bars and did not view them as "information reports." This indicates that we should think about redesigning the way in which our

data is presented to our users. Perhaps we can explore something like a pie chart as outlined in a few of our concept sketches.

Overall, our users seemed to enjoy their experiences and found the simulated scenarios fairly useful in determining a standard for their preferences. One expressed interest in viewing other types of scenarios such as an actual interaction with a roommate or a “sexile” type situation, which are definitely worth exploring as they can be a large part of living with a roommate.

**Word Count: 1489**