Heuristic Evaluation of Simbiotic

1. Problem

Simbiotic is an AR app that exposes users to possible roommate situations, helps users discover their own living preferences, and gives users conflict resolution strategies.

2. Violations Found

1. **H1- Visibility of Status/ Severity 2 / Found by: A, B, C, D**
   After answering the last question, the user is allowed to proceed. It would be nice to have a counter or a progress bar of how many scenarios that the user has completed/must complete before moving on to know where they are at in the current stage of the app.
   Fix: Add a progress bar to the screen.

2. **H1- Visibility of Status/ Severity 2 / Found by: C, D**
   After answering one of the questions that are prompted when the user clicks on an icon representing a room scenario, there is no acknowledgement that the response was received. It would be helpful for users to receive confirmation that a response was received.
   Fix: Highlighting or changing color of answered question.

3. **H2- Match between system and the real world/ Severity 2 / Found by: A, B, D**
   The "What You Care About" screen shows various items on a scale of 1 to 10. It's not explained what the scale means (like, with Overnight Visitors being a 3, does that mean overnight visitors once a month? Or only overnight visitors with a day's notice?).
   Fix: Change the rating system, add a "what does this mean?" button that users can click on for an explanation, or add a short description under each category (for example, cleanliness 7 could be "you tidy often, but sometimes clutter builds up")

4. **H2- Match between system and the real world/ Severity 2 / Found by: A, B, C**
   On the Roommate Preferences Form, the users are given a statement and then asked to select how much they agree or disagree with the statement. This is known as a Likert Scale, and is normally used with either a 5 point or 7 point scale. In the app, the user is shown a 10 point scale. Since this is different from real world conventions, users may be confused what the scale represents.
   Fix: Either have the users rank their preferences from 1 to 10 or change the scale to a 5 or 7 point scale (with more explanation of what each bubble represents).

5. **H2- Match between system and the real world/ Severity 1 / Found by: B**
   The app uses female pronouns for the roommate. At Stanford, freshman who identify as male are usually automatically paired with male roommates, so this might be a bit

confusing or jarring for male users. Also, there are a number of people who don't use either male or female pronouns, so they wouldn't be included in this app.
Fix: Either remove all the pronouns from the app and leave the roommate's gender unspecified or have a question that asks for the expected gender identity of their roommate.

6. **H2. Match between system and the real world/ Severity 2 / Found by: B, C, D**
The phrasing for the 4 options given in the quiz is very strong - doesn't match how college students would normally talk in real life. For example, during the dirty dishes simulation, "I'm gonna yell at her when she gets back!" or "That is so disgusting - I may puke" would rarely be said in real life - something more like "I'm going to text my friends/parents complaining about my roommate" or "I'm going to passive aggressively mention this problem to her" would be more indicative of what a college student would say or do.
Fix: Create more nuanced phrasing that better reflects how a college student would verbally respond. Introduce more actions integrated with a verbal response.

7. **H3: User control and freedom / Severity 3 / Found by: A, B, C, D**
There are no back buttons allowing you to go back and edit responses to a question or review the messy scene; very forced linear progression throughout the app.
Fix: Add back buttons to every screen and allow people to view simulations multiple times.

8. **H3: User control and freedom / Severity 1 / Found by: A**
There is no way to save your progress and there is no indication of your progress throughout the quiz.
Fix: Add a way to save and return to finish the quiz taking and have a way to edit your past quiz responses in the future. During the quiz portion, you could have a progress bar allowing the user to track how far along they are in their quiz.

9. **H3: User control and freedom / Severity 1 / Found by: D**
In a single room photo, there is only one mess to click on, even though the photo itself may present the user with multiple.
Fix: It would be useful for the app to include additional input that users may self select beyond the actual marked parts of the room that can later be incorporated in additional test or updated simulations made by the app.

10. **H4: Consistency and Standards / Severity 1 / Found by: B**
The interface says that there is a pile of dirty laundry spilling into your half of the room and that your roommate doesn't use a basket, but the photo seems to show laundry in tote bags that seems relatively self-contained. This difference between the image and the description may confuse users
Fix: Either change the description or change the laundry pile so that it's consistent

11. **H4: Consistency and Standards / Severity 2 / Found by: A, B**

    The interface options are laid out in the same order and with the same colors for the dirty plate and the laundry pile, but the order and descriptions change for the bed and the alcohol. This can confuse the user because they may have thought they knew where to click but then the option isn't where they expected it to be.
    Fix: Make all the options consistent and laid out in the same order. One way to do that is have the top left one be "___ I don't care", top right "___ I'm disgusted", bottom left "____ Don't like but won't confront" and bottom right "Definitely will confront about this"

12. **H4: Consistency and Standards / Severity 2 / Found by: A, B**

    The buttons for continuing to the next screen are labeled in different ways and have different coloring. It seems that most of the app's Continue buttons are white text on blue. This inconsistency may confuse users - their eye might be drawn towards the Finish button at the bottom of the screen instead of the Continue button.
    Fix: Make the Continue button white text on blue, or change all the buttons to match.

13. **H4: Consistency and Standards / Severity 1 / Found by: B**

    The initial instructions tell the user to "Explore this room in AR by clicking on the arrows to discover different roommate simulations marked with a blue pin". Since this is a phone app, the users should be instructed to tap on things rather than click on them (not possible on a phone).
    Fix: Change "clicking" to "tapping".

14. **H4: Consistency and Standards / Severity 2 / Found by: C, D**

    Could be potentially misleading to users that the possible answers are color coded. It may suggest that specific answers will lead to a specific result/interpretation by the app, and might skew user input/cause users to wonder if they mean similar things.
    Fix: Have a uniform button color for question answers.

15. **H6: Recognition Rather than Recall / Severity 3 / Found by: B, D**

    The Stanford login screen is after the user goes through the selection process, so if the app crashes or the user closes the app, the users will have to restart the whole process and remember their previous choices.
    Fix: Have users log in first, so that all of their choices will be automatically saved. Also make it clearer that they will have to log in at the beginning

16. **H6: Recognition Rather than Recall / Severity 2 / Found by: D**

    In the Room Preferences Form, the user may want to go back and compare their responses on a previous part of the survey after filling out a different part of the survey, and it would be helpful to get a chance to see the auto fill score that they previously received before changing.

Fix: So for example, if I changed from an auto filled 4 to a 6, but after doing half the survey, felt like I wanted to think again about my decision, having a color mark noting the original 4 would help the user if they came back to that part of the survey.

17. **H7. Flexibility and efficiency of use/ Severity 2 / Found by: A, D**
It would be useful to the user to be able to see a collection of their own responses at the "What You Care About" page alongside the categories they are introduced to and the rankings they received. It may be that users are curious or don't understand their results, so displaying their responses in a slide out sidebar for example could help them interpret their results better.
Fix: Add a "save screenshot" option to the "What you care about" screen, or on the "Explore more resources" screen, add a button to "View your preferences".

18. **H7. Flexibility and efficiency of use/ Severity 1 / Found by: D**
For advanced users (or users who have completed the survey aspect), it would be useful to be able to skip straight to the Explore More Resources page.
Fix: Allow skipping to the resources page

19. **H8. Aesthetic & Minimalist Design/ Severity 3 / Found by: A, C, D**
There are many different shades of blue used throughout the app.
Fix: Use a standard shade of blue throughout app.

20. **H8. Aesthetic & Minimalist Design/ Severity 1 / Found by: D**
"What You Care About" title is not centered on the screen that it is displayed. Small aspect but may contribute to overall aesthetic design.
Fix: Center "What You Care About" title.

21. **H8. Aesthetic and minimalist design/ Severity 1/ Found by: A, B**
On the "Topics to bring up with your roommate" screen, the color scheme ranges from mint to blue to purple. Mint and purple aren't used anywhere else in the interface, and don't seem harmonious with the app. Also, the topics aren't listed in any particular order.
Fix: To keep up with your blue theme, keep the buttons in shades of blue, or other neutrals like white, grey, or black so the screen is less distracting. Order the topics alphabetically.

22. **H8. Aesthetic and minimalist design/ Severity 1/ Found by: B**
Many of the screens have images in the background that don't seem related to the topic and are distracting from the interactive elements on the screen. For example, the starting screen and the "What you care about" screen.
Fix: Remove the background image and make it a solid color instead

23. **H8. Aesthetic and minimalist design/ Severity 2/ Found by: A, B**

The five common ways of dealing with conflict list is light and dark blue text surrounded by a light blue box. This is difficult to read (especially for older people).
Fix: Change the text color so that there is more contrast and use a dark (unfilled) border around the list instead of a colored in box.

24. **H10. Help and Documentation / Severity 1 / Found by: A, C, D**
For the Five Conflict Management Styles page, it feels like the 5 options would be able to be clicked on and either pan to or drop down descriptions of each management style.
Fix: It would be helpful for users to be able to read up on 5 short definitions of these to better understand conflict resolution before diving into the app's recommended management style.

25. **H10. Help and Documentation / Severity 1 / Found by: A, C, D**
Following the auto fill notice, the user may wonder why the auto filler actually chose those specific ratings. They may see that the initial drop down went away for the first fill in, and could click on the other auto fills hoping for similar drop downs that explain the score they received, but don't get a description.
Fix: It would be useful for each fill in to have a small drop down description that explains the app's decision for the score the user received.

26. **H10. Help and documentation/ Severity 1 / Found by: A**
On one of the end screens, the "Learn About Roommate Contracts" button prompts you with topics to bring up with your roommate, but doesn't define what a roommate contract is.
Fix: When clicking on "Learn About Roommate Contracts" screen, have an instructional start screen defining what a roommate contract is, and the purpose of this section.

27. **H10 Help & Documentation / Severity 1 / Found by: C**
The interface lets the user use AR around their room, and places a blue marker on notable areas of messiness. It may not be completely clear that these blue markers are clickable however. It is also vital to the app that these blue markers are clicked so that the user may move forward with the evaluation process.
Fix: There should be some more clear indication that the the blue marker must be clicked since this feature is vital to the app. This could mean having the blue marker jump up and down or light up in some way.

3. Summary of Violations

Category	# Viol. (sev 0)	# Viol. (sev 1)	# Viol. (sev 2)	# Viol. (sev 3)	# Viol. (sev 4)	# Viol. (total)
H1: Visibility of Status	0	0	2	0	0	**2**
H2: Match Sys & World	0	1	3	0	0	**4**
H3: User Control	0	2	0	1	0	**3**
H4: Consistency	0	2	3	0	0	**5**
H5: Error Prevention	0	0	0	0	0	**0**

H6: Recognition not Recall	0	0	1	1	0	**2**
H7: Efficiency of Use	0	1	1	0	0	**2**
H8: Minimalist Design	0	3	1	1	0	**5**
H9: Help Users with Errors	0	0	0	0	0	**0**
H10: Documentation	0	4	0	0	0	**4**
Total Violations by Severity	**0**	**13**	**11**	**3**	**0**	**27**
Note: check your answer for the green box by making sure the sum of the last column is equal to the sum of the last row (not including the green box)						

Summary Of Violations

4. Evaluation Statistics

Severity / Evaluator	Evaluator A	Evaluator B	Evaluator C	Evaluator D
sev. 0	-	-	-	-
sev. 1	38%	38%	.18%	38%
sev. 2	64%	55%	.45%	64%
sev. 3	100%	66%	.66%	100%
sev. 4	-	-	-	-
total (sev. 3 & 4)	100%	66%	66%	100%
total (all severity levels)	56%	48%	37%	56%

**Note that the bottom rows are *not* calculated by adding the numbers above it.*

5. Summary Recommendations

Overall, the Medium-Fidelity prototype does a great job of demonstrating Simbiotic's concept and has a very streamlined flow. The main user interface issues involve consistency and an aesthetic, minimalist design.

The choice of one main color is not only an excellent branding decision but also very aesthetically pleasing. However the different shades of blue are likely to mislead users into thinking there is a significant meaning behind each shade. Using fewer shades would provider a cleaner look and a less confusing UI. However, the current color shading is very fitting for living spaces, and is very pleasing (we are curious though if the color of the app versus the different colors of the simulation may be a bit contrasting). By coming up with a style sheet for the app, these types of consistency issues can be fixed, which will allow the user to navigate the app much more smoothly. The app seems to be a bit cluttered, with many background images that draw the user's eye from the interactive elements on the screen. By going through the app with a critical eye and removing unnecessary images / colors / etc, these design issues can be fixed.

Our biggest issue around the app during this heuristic evaluation was the forced linear progression the user had to take. Because there were no back buttons, we had to refresh the prototype and start over from the beginning if we wanted to look at a previous screen. The application's utility depends on how well it can predict your living preferences and therefore in order to produce the best results, the users should be given more flexibility in terms of going back to review their answers or to select and deselect their answers to the questions more clearly. We found that while all questions in the simulation were relevant, it felt easy to forget about what we answered and inspected in the simulation, and would be nice to see previously answered questions or previously auto-filled survey answers. These fixes may seem simple, however, they would greatly add to the experience of the user and keep them on track as they use the app.

We found the app enjoyable to use and are excited to see the high fidelity prototype!

Heuristics

H1: Visibility of System Status
- Keep users informed about what is going on

H2: Match Between System & Real World
- Speak the users' language
- Follow real world conventions

H3: User Control & Freedom
- "Exits" for mistaken choices, undo, redo
- Don't force down fixed paths

H4: Consistency & Standards

H5: Error Prevention

H6: Recognition Rather Than Recall
- Make objects, actions, options, & directions visible or easily retrievable

H7: Flexibility & Efficiency of Use
- Accelerators for experts (e.g., gestures, kb shortcuts)
- Allow users to tailor frequent actions (e.g., macros)

H8: Aesthetic & Minimalist Design
- No irrelevant information in dialogues

H9: Help Users Recognize, Diagnose, & Recover from Errors
- Error messages in plain language
- Precisely indicate the problem
- Constructively suggest a solution

H10: Help & Documentation
- Easy to search

- Focused on the user's task
- List concrete steps to carry out
- Not too large