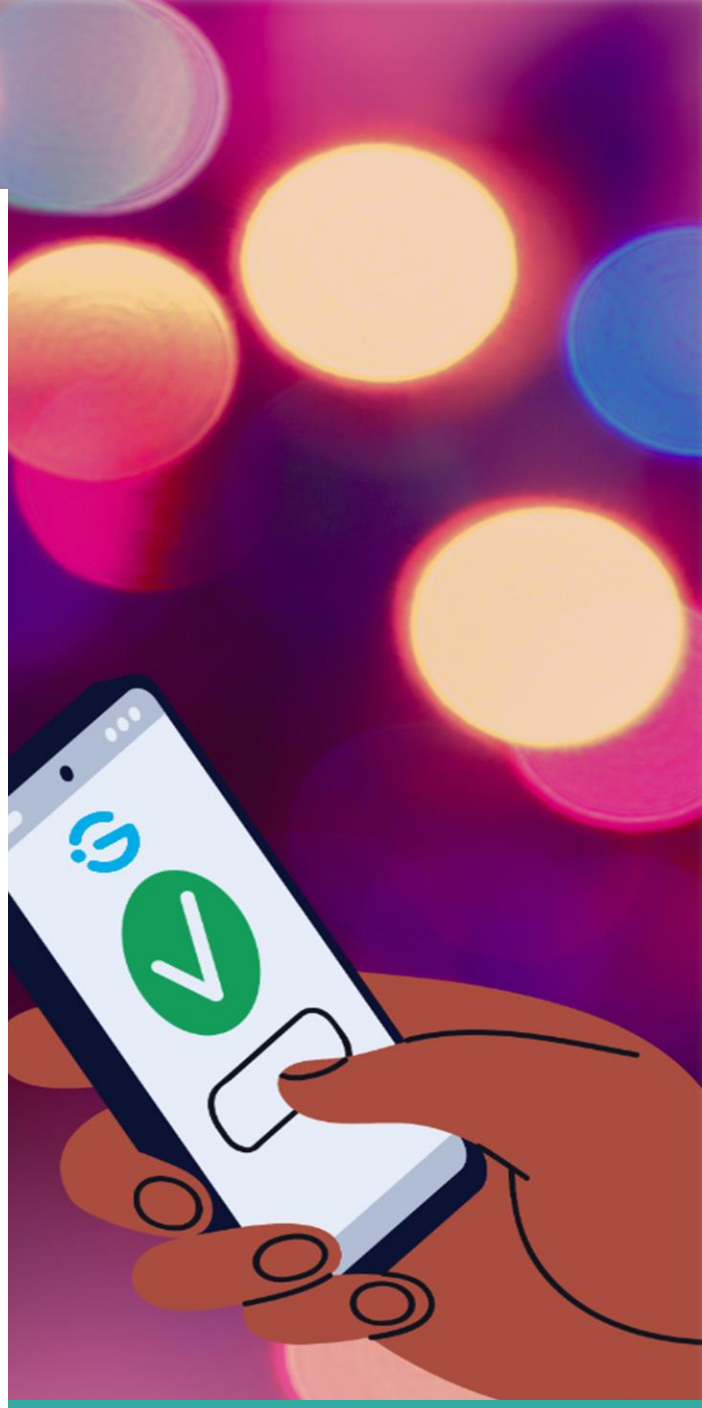
GOVEE HOME USABILITY REPORT 2024



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GOVEE HOME USABILITY REPORT

Phase 4: Analysis of User Testing Data and Conclusions

In the first phase of my research, I presented that the Govee Home Application should meet certain criteria to be an effective smart home device:

Many of the Govee devices have limited to no physical interfaces, so the ability to control the devices through the app is essential. The interface should be easy to use for multiple users because anyone in the house should have control over the lighting and the lightings settings. The goal of this test is to ascertain the usability of the interface of the Govee Home App for multiple users in the same household. (Meher, Phase 1 report).

On April 14th, 2024, I ran the test from Phase 2 three times with three participants who all lived in the same home. The test was designed to collect data on the usability of the Govee Home app for people of different ages and experiences with smart lighting management applications.

Summary of Test Design

The test I created did not get into the weeds of lighting customization and voice command integration. Each task, and there 7 tasks, focused on routine light management tasks that followed standard features of the application: testing voice commands would have introduced outside technologies (i.e. Alexa or Siri), and testing customized lighting environments would have less to compare to in a physical light switch environment.

Environment and conditions

The setting the tests were collected in was a home-like setting: couch, coffee table, and Govee strip lights arranged on the wall facing the participants; participants could easily track the behavior of the lights during testing. Curtains were drawn to minimize outside light and simulate a darker environment where lights would be needed. The

participants were provided a test iPhone that was preloaded and pre-opened to the software and already connected to the network: I was not testing the usability of setting up a Govee light device in the home, so it was important that everything was already in place, that there were not issues with the app working differently on different devices, and that the participant was not searching around for the app, although, searching for the app when a user wants to operate the lights is a real world problem that was not addressed in this study, as setting up consistent conditions that wouldn't seem artificial to the participant would be difficult and potentially skew the data.

Tasks

Users were tasked to operate standard lighting functions with a few tasks related to the specific capabilities of a smart home lighting device: turn on the lights, dim the lights, brighten the lights, set to a preset color option, set to a present color theme ('Scene'), set to a warm white (mimicking the soft white hue of a filament light bulb), and turn the lights off. I chose these tasks because they could easily feature a physical, mounted light controller – much like a dimmer switch, but with just a few more options.

Timing

In the test I collected the time it took for each participant to complete each task, though I won't be drawing exact conclusions on the time it took to complete the tasks. A timer was started as soon as I said the word begin, but often the participant had already been looking over the app's various features during the previous test/s. Also, the time it took to complete a task on a software new to the user would not reflect the time it would take for the same user who had become accustomed to the software. To get meaningful data and information on timing for tasks, a longer, multi-part study would have to be enacted.

Assistance

Assistance was only offered to participants if they requested it and had exceeded the time limit for completing the tasks. Users were not informed that there were time limits on any task, and they were reassured frequently that they were not being tested: the software was being tested. The kind of assistance provided had conditions: the tester could only give hints about the applications general structure and hints about standard software functionality (i.e. “you can scroll through menus with a finger”; “clicking on headers sometimes opens a drop-down menu”; “headers can be scrolled horizontally sometimes”; “dimming is a main menu feature”; etc.). There was a secondary time cutoff, usually after 2 or more minutes, or if a participant stated, “I can’t do it”, in which the test would not be completed and the tester would not provide further hints or tutorial; rather, the test would move on to the next task without resolving the previous.

Legal & Safety

Consent forms were collected from each participant and the contents of the forms were summarized to them, all before testing began. Safety measures were provided as outlined in Phase 2 of this study, and basic health and safety materials were provided such as hand sanitizer, masks, and safety disclosures outlined in the consent forms.

Demographics

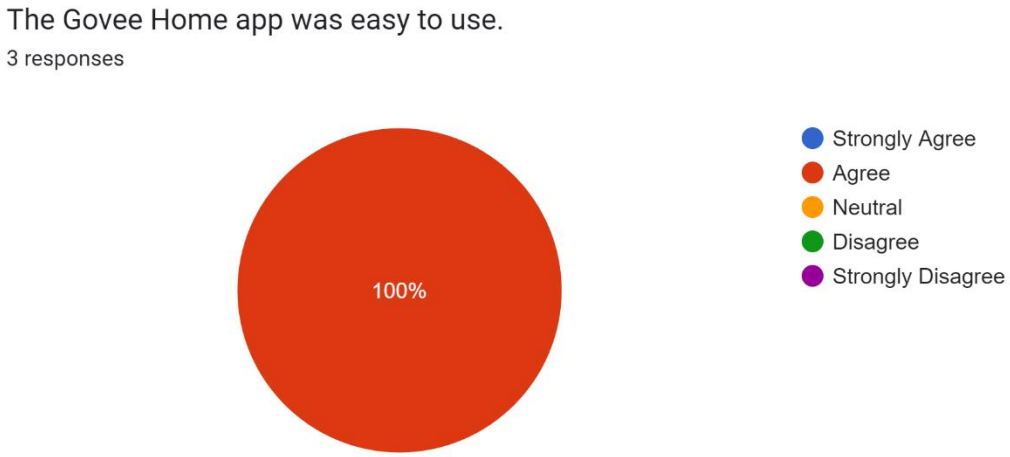
2 of 3 participants categorized themselves as 55+. 1 participant categorized themselves as 35-45. 2 of 3 categorized themselves as women, and 1 categorized himself as man. All participants were residents of the same home.

“This isn’t intuitive or instructive to me, but it is pretty good structure.” - Participant

Findings: Participant Survey Results

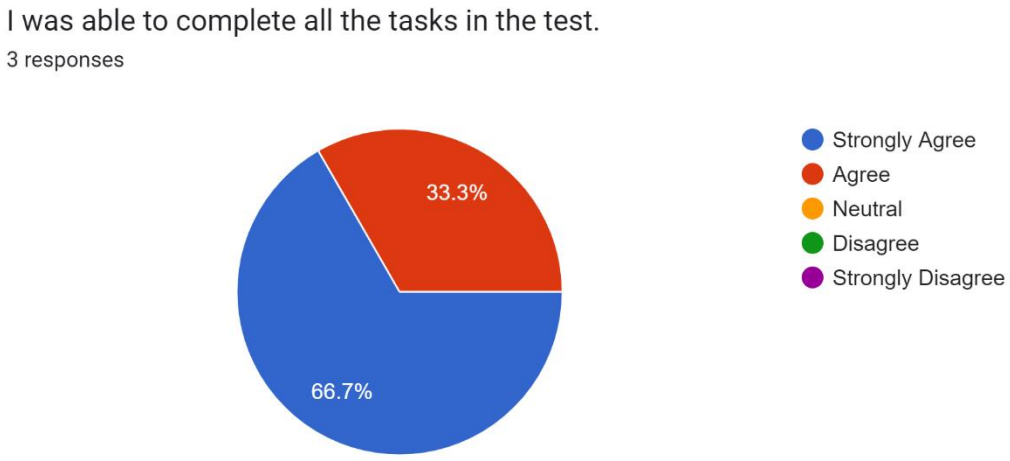
Was the Govee Home app easy to use?

100% of the participants *agreed* that the app was easy to use, but none of the participants *strongly agreed* that it was easy to use.



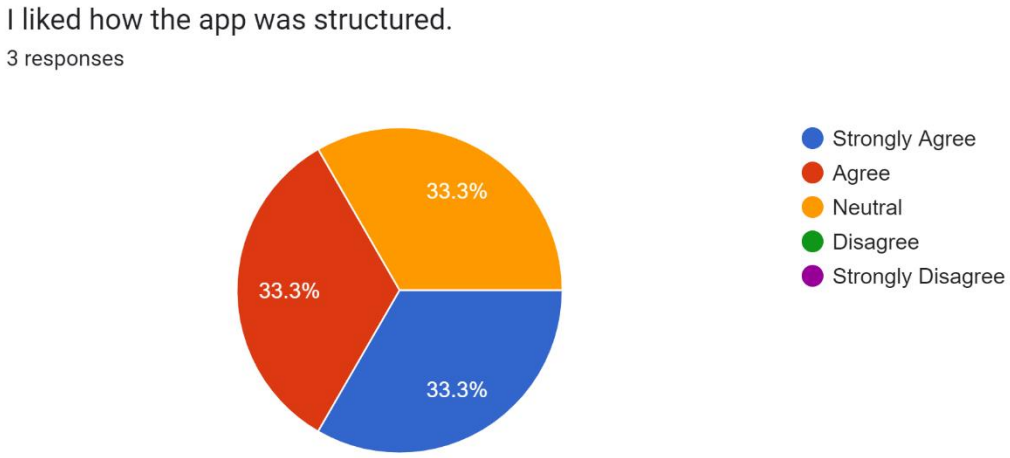
Were participants able to complete the tasks?

2 out of 3 (66.7%) of participants *strongly agreed* that they were able to complete the tasks. 1 out of 3 *agreed* that they were able to complete the tasks.



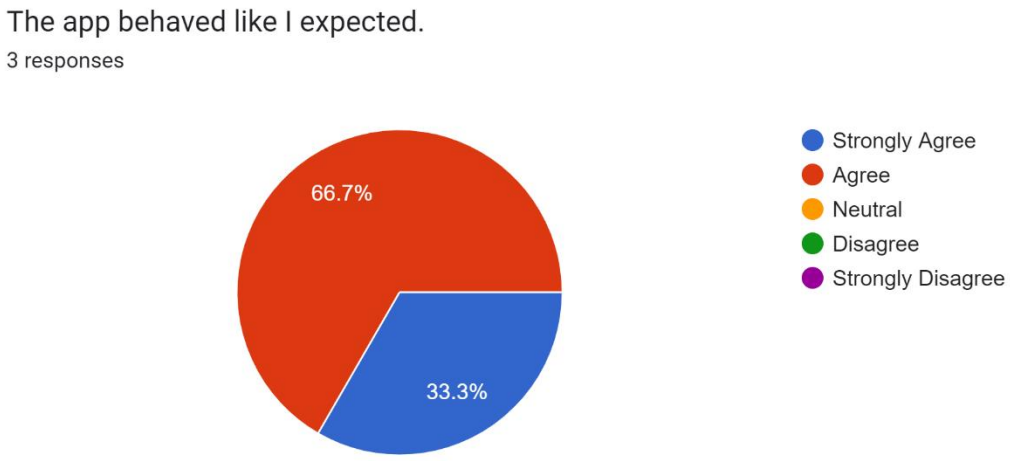
App structure

1 participant *agreed* that they liked the structure. 1 participant *strongly agreed* that they liked the structure. 1 participant was *neutral* about the structure of the application.



App behavior

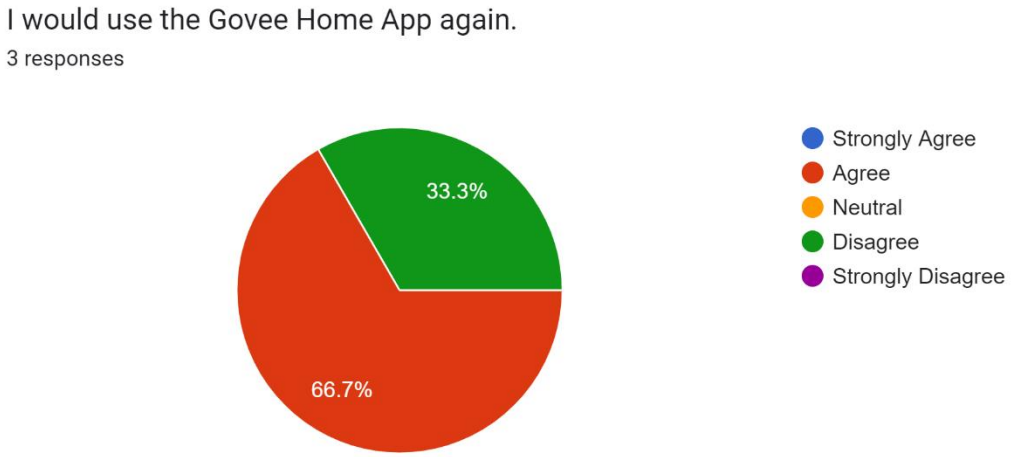
2 participants *agreed* that the application behaved like they expected. 1 participant *strongly agreed*.



Suggestions

2 participants *agreed* that the application was “great just the way it is”. 1 participant *strongly agreed*. Suggested improvements were:

- “Maybe a brief tutorial but I did find everything that was needed.”
- The hardest thing was “Navigating all of the functions with ease.”
- The hardest thing was “finding the study setting”.



Best About the App

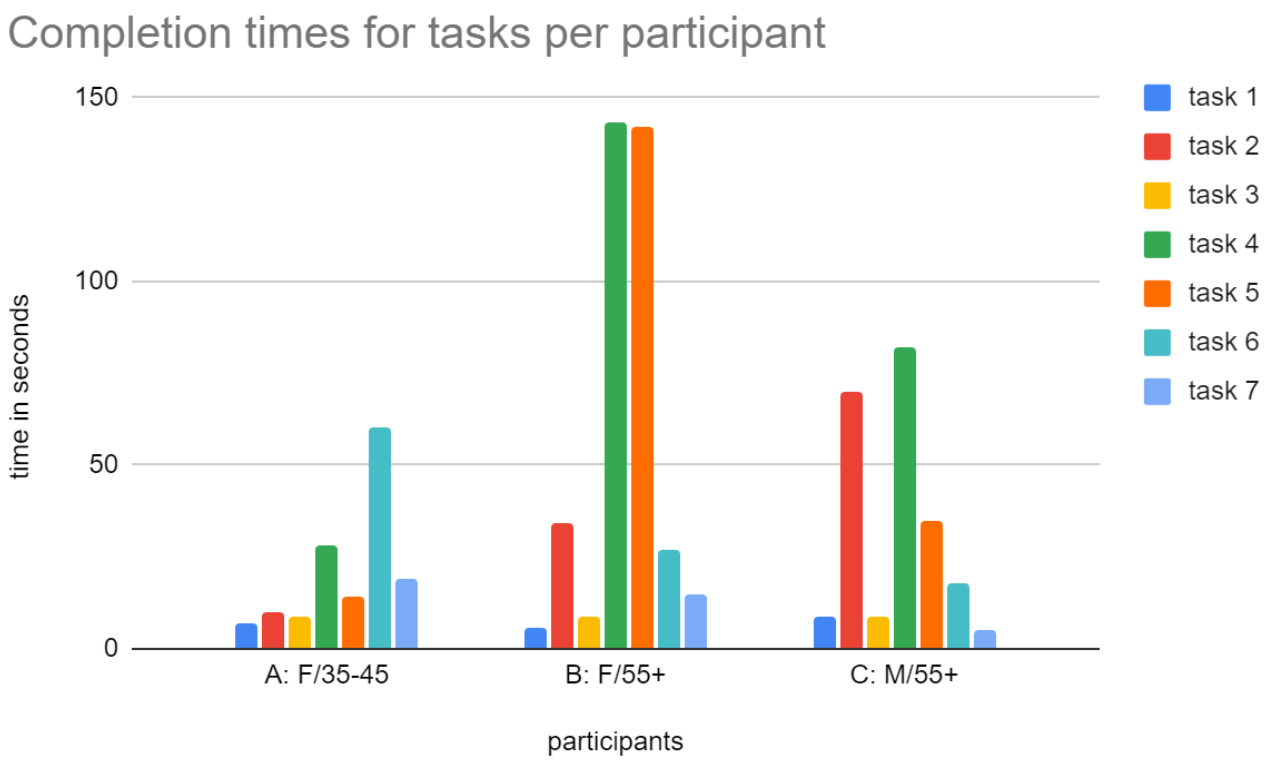
2 participants responded in the survey with what they liked best about the app:

- “It is visually pleasing.”
- “It was fairly intuitive.”

Findings: Tester’s Results

There were 7 tasks. Each of the three participants attempted each of the 7 tasks, so there were 21 possible completed tasks. 19 tasks were completed; 2 tasks were not completed. There were 3 instances when participants asked for assistance. 2 participants requested assistance on task 4, and one participant requested assistance on task 5.

- Overall, 90% of tasks were completed.
- Assistance was requested 14% of the time.
- **Task 4**, *Select Preset Color*, was the only task that took a greater time to complete that was common across participants.



Participants labeled A-C. F or M means Male or Female/Numbers show participants identified age range.

Summary of Tester's Notes

Task 2: One participant struggled with realizing that the menu scrolled resulting in them needing approx. 20 seconds more time to complete the task than the other participants.

Task 4:

- A participant requested assistance: they didn't know scrolling was an option on the menu. Participant was "lost" in a nested menu and didn't know how to get back. The tester hinted that scrolling is possible on the home menu and

that all the tests occur on the home menu. Participant was able to complete the task after receiving the hints.

- Another tester asked for assistance because they didn't understand that the light segments must be selected to change the color of the lights. The tester hinted that the light segments must be selected, and they were able to complete the task.
- Task 4 took the longest to complete for all participants.

Task 5: Participant didn't understand that the tabs for the scene headers scrolled horizontally by swiping the finger, nor did they realize those headers would open drop downs.

Task 6: Participant thought the light was set to warm white, but it was still on the previous white setting. The tester did not correct them, so there is a discrepancy in what the tester counted as completed and what the participant counted as completed.

Task 7: While taking the survey, one participant said, "I don't know about the structure of any app because I don't know about structure." Another participant stated while taking the survey that the app "isn't intuitive or instinctive to me, but it was pretty good structure." Another participant stated that she wished surveys didn't "lump everyone over 55+ together." She elaborated that "all surveys do it, but every other age range takes into account a decade or two, but 55+ often covers 5 or more decades. I've met 70-year-olds who are better at tech than me, and I've met younger people who are worse at managing it. I just don't think it is fair that we all get lumped together across more than 5 decades."

Summary of Findings

All Participants reported that they liked the user interface of the application, despite 2 of them struggling on at least 2 of the tasks and requesting assistance. The time it took for the only participant under 55 years old was less than the participants over 55 years old.

There were no tasks that took less than 5 seconds for any of the participants to complete, and many took much more time than that. While an application is a great way to supplement control of a smart light product, those kinds of times and gulf of execution needed to complete simple dimming and light change functions is too great to replace the conventional wall mounted light control apparatus.

Times were measured to give general ideas only, but there are other amounts of time that must be factored in to solely using a smart device to control a smart light product: time it takes for the user to locate their phone (what if they forget it upstairs and want to turn on the lights in the bathroom at night?), time it takes to find the app on their device, time for the app to load, time to locate the right light product (often people have at least several different products and in different rooms), and so forth. Testing is not needed to compare the much narrower gulf of execution to feel for a light switch and turn it on, even we included a dimmer and extra button for extra features on the light switch surface.

Participants like the user interface, though, and all of them reported interest in using the software again, so the Govee Home App succeeded in being appealing to users. They predominantly were able to complete all the tasks, and no one became frustrated or gave up on any task.

Recommendations for Improvements

1. Preset Colors should be labeled with color names: one participant was color blind, so I had to choose the color white for the preset color (white is one of the only colors not affected by the various forms of color blindness, but that even could be affected by different screen settings). Labels would improve accessibility.
2. Light strip should default to all segments selected. Each user was confused that they had to scroll up and make sure the entire light strip was selected, because the default setting is no light segments selected. That adds an extra step that doesn't make practical sense: there is no time when a user will hope to change the color to no lights unless they want to turn the lights off. Here, the affordance and gulf of evaluation could be improved.

3. Eliminate horizontal scrolling headers for Scenes or improve UI to cue the user that the headers scroll. Horizontal scrolling is not utilized anywhere else on the product's home menu, and there is no cue to the user that they can scroll horizontally. Scrolling horizontally through tabs is not as familiar for some users, so greater work should be put into onscreen indicators, or the problem could easily be remedied by stacking the various scene headers (more like a stack of buttons) rather than have them scroll horizontally.

Conclusion

By and large, the app is well received and functions well according to the users and according to the notes the tester kept. While a phone app can never replace a physical light switch, much customization and enjoyment can be gleaned from using the software to explore the range of the products features and learn how it operates. I recommend that further studies be conducted to see how users like using software compared to wall mounted switches and how to make the software more intuitive for users over the age of 55.

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