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Interaction Design Studio

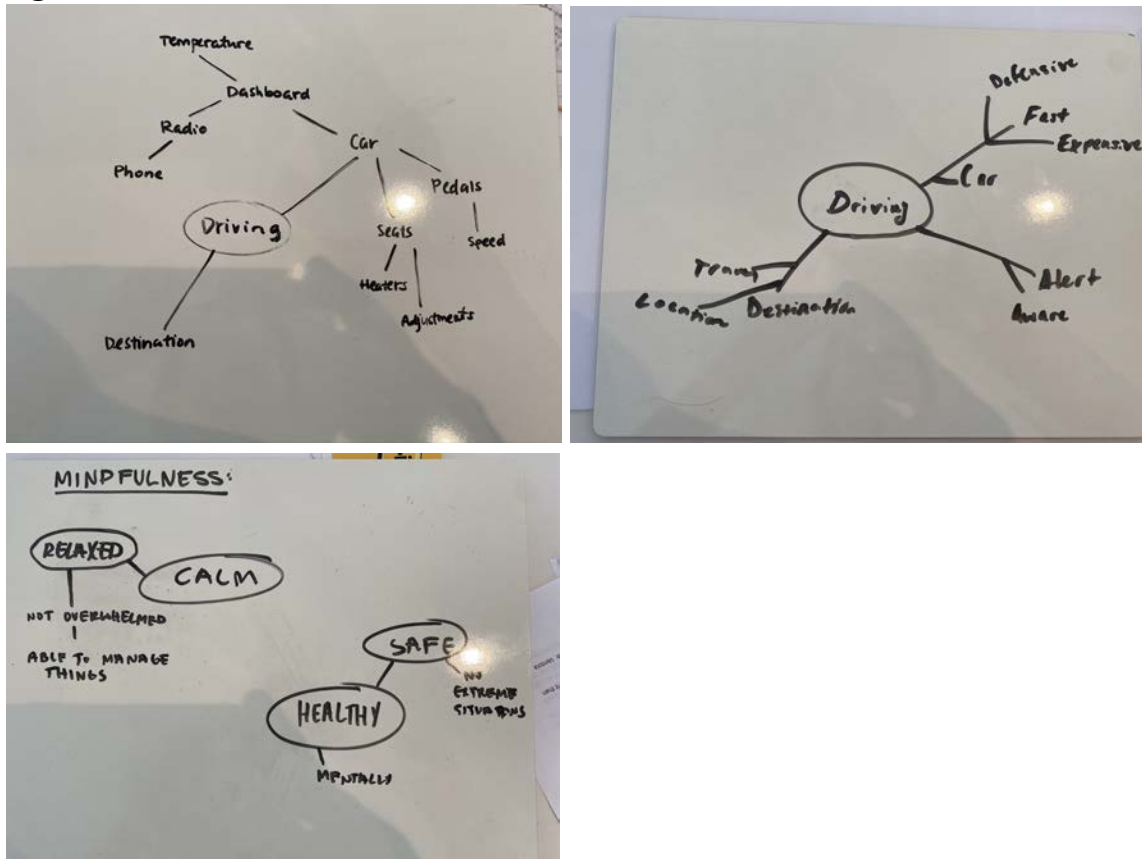
March 9, 2022

Participatory Design for Mental Wellbeing and Behaviors while Driving

The topic of this report is focused around understanding drivers' mental wellbeing while driving and behaviors used to lessen anxiety and stress felt while driving. The problem is that drivers today find driving as a stressful activity. Our goal is to create a product that would allow drivers to decrease their stress and anxiety through proven methods. The target users are young drivers ages 18-30 who need to drive to classes, work, or social activities. We are hoping to design for a sense of control within a car environment through encouraging mindfulness through the implementation of proven de-stressing methods that allow environmental mastery for the user.

There were 3 participants for the workshop and it took place in Stubbins Gallery for an hour. Before the workshop began, we had asked the people attending to take pictures of their process with driving and jot down their feelings and memories. The workshop started with an Immersion phase, with both a Mind Map and Activation of Feelings & Memories. For the Mind Map, we split the participants into 2 tasks. 2 people created a mind map of what immediately came into their mind when they thought of "driving." The other participant created a mind map focused around the word "mindfulness."

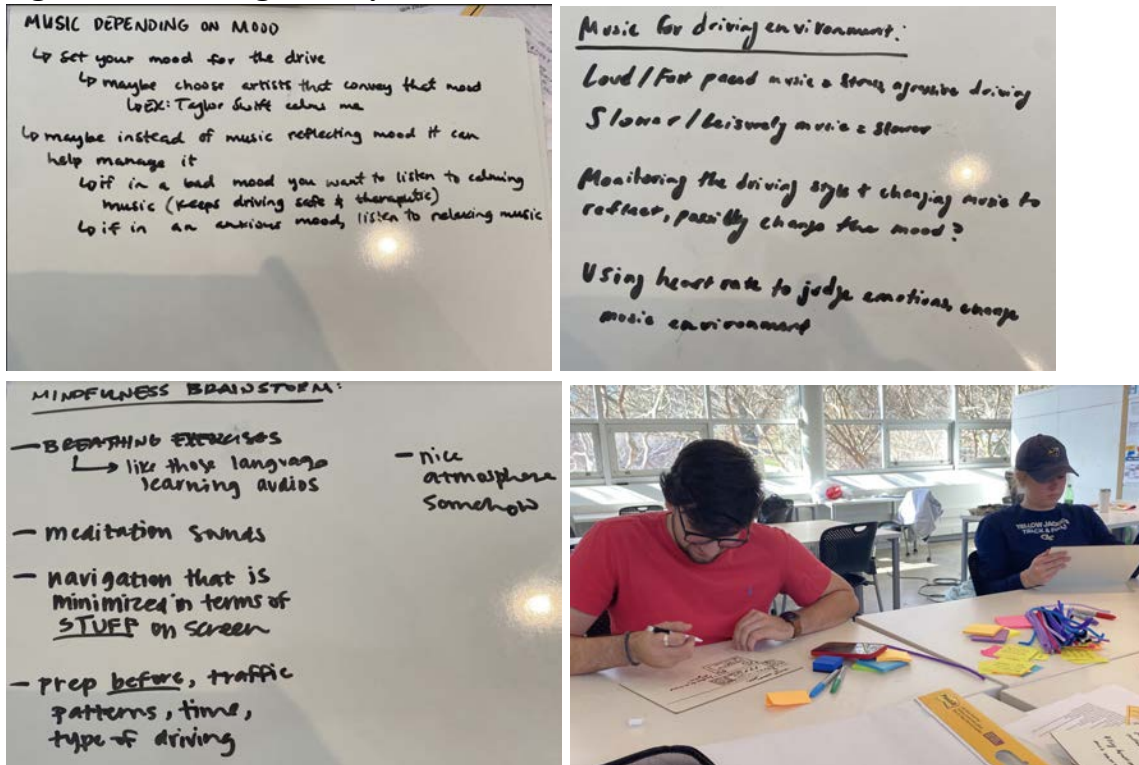
Figure 1



Mind Maps of the 3 participants

The next activity, or the “dreaming” activity, was based on activating the participants’ feelings and memories around driving. For this activity, one participant was asked to come up with ideas for how they would incorporate mindfulness into a driving routine, and the other two participants were asked to brainstorm ideas for how they might incorporate music to create a better driving environment. For mindfulness, ideas included incorporating heart rate, breathing exercises, and prep before driving. Another idea was to incorporate simplified, minimalistic navigation for the user to help reduce stress. For music, ideas included incorporating the option for the driver to select music based on their mood and/or driving style.

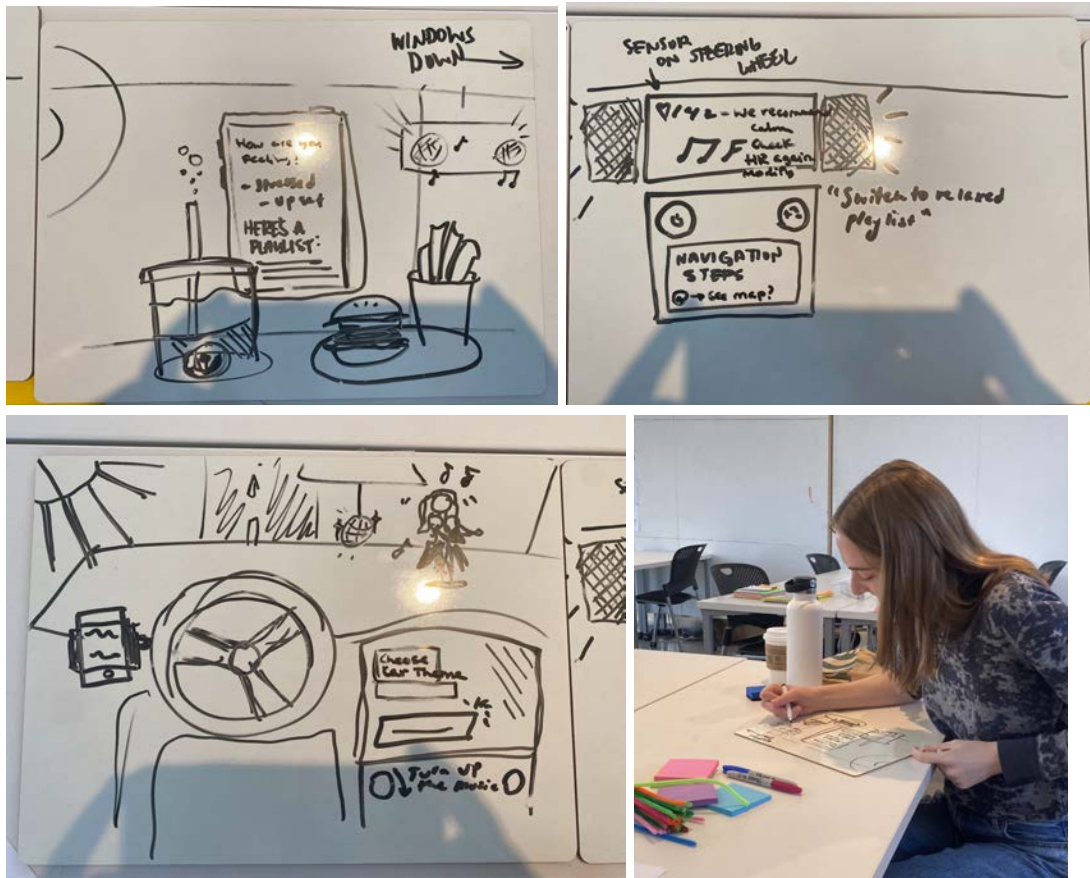
Figure 2: Dreaming Activity



Group Brainstorming Results

The next activity as part of the dreaming phase, or “round robin” activity, everyone worked individually to begin sketching design solutions. Participants were given 4 minutes to sketch, passing their sketches to the next participant every 30 seconds for each person to add on. Final ideas included a heart rate tracker, an option to customize driving theme, and an option to select playlists based on the user’s mood.

Figure 3: Dreaming Activity Continued



Round Robin results

For the third activity, or bisocation and expression activity, participants were instructed to prototype and create a skit that would lead others through their design ideas created in the Round Robin round. Participants were given a total of 4 minutes to prototype with pipe cleaners, then acted out a skit to share their design ideas with the other participants once the time was up. The final ideas included a heart rate tracker along with a steering wheel, an option to customize driving theme, and an option to select playlists based on the user's mood. Participants worked individually for this task rather than in teams.

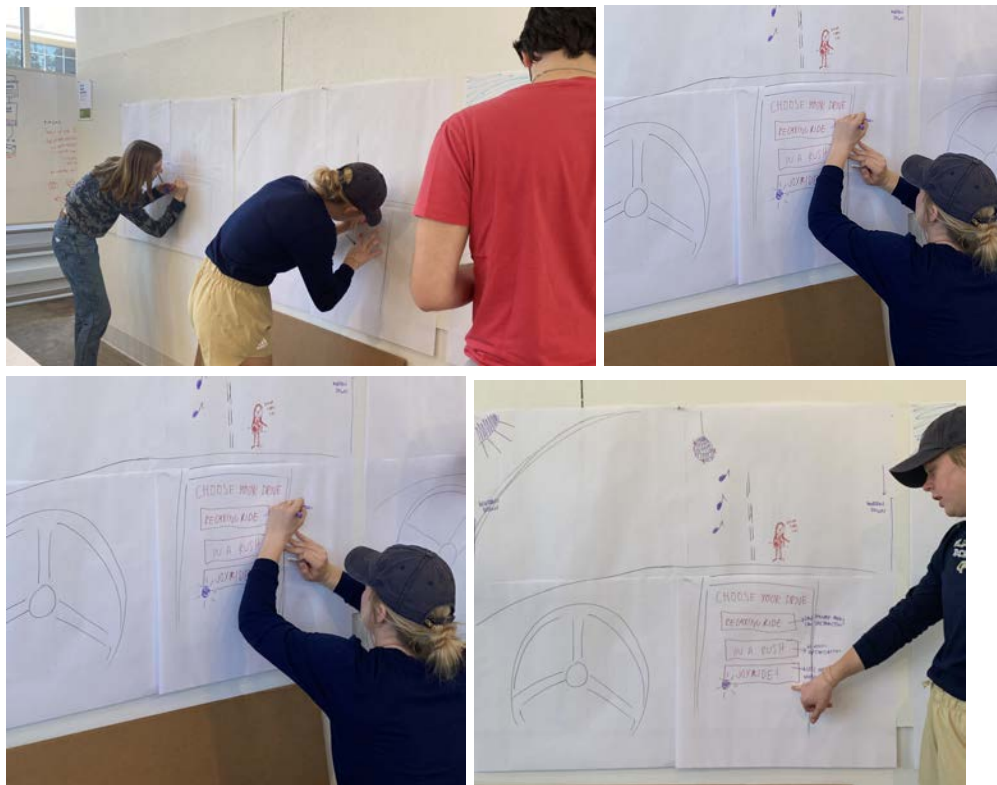
Figure 4: Bisociation and expression activity results



For the last bisociation and expression activity, or car visualization activity, users were given a total of 5 minutes to draw what their prototype/skit would look like from a driver's

perspective. Users were provided with large sticky notes and Sharpies and instructed to visually represent their concepts on paper, rather than through model-making. The large sticky notes already included a “template” of a car for the participants to draw over. Participants worked individually for this task rather than in teams. After the 5 minutes were up, participants explained their car visualization ideas. Once again, the visualization ideas included a heart rate tracker along with a steering wheel, an option to customize driving theme, and an option to select playlists based on the user’s mood.

Figure 5: Car Visualization Activity





Our toolkit consisted of various low-fidelity prototyping materials to allow our participants to explore form and design considerations, as well express their ideas in a clear, concise, and fun manner. Our participants used erasable whiteboards for the mind-mapping activity, brainstorming activity, and Round Robin activity. For the bisociation and expression activity, our participants used pipe cleaners to prototype their design ideas. For the car visualization idea, materials used included large sticky notes, which were pinned together to provide a large, actual-sized drawing space, and Sharpie markers. Sticky notes were purchased as well but were not used during any workshop activities.

Toolkit



In terms of the workshop, we were able to analyze it through audio recordings and pictures we took during it. A key similarity we found was that all the participants seemed to want to have control over the system. In this case, the AI used within the system should only guide the users and recommend choices that would be beneficial for their health based on data from sensors in the car, while the users themselves would actually make the final decision. This was new for us because we had always thought that the system would be automatic where the AI would sense distress from the user and then automatically change the environment to help suit the users' needs. Another we found turned out to be a paradox, where a users' mood typically influenced the music and audio they played, but the music and audio can then influence the users' mood as well. In this case, the user would either choose music that would fit with their current feelings and emotions or choose music that was the opposite of how they were feeling in order to change their mood. Lastly, we found that the users' mood, and therefore also their

music, affected how they would drive. If there were a faster tempo song being played at a higher volume, then the user would be more likely to drive more aggressively and faster. Whereas, if there were a slower tempo song played at a lower volume, users would drive slower with more awareness to their surroundings.

For the design direction, we have decided now that while we need to include stress detection methods to help drivers cope with stress and anxiety, haptic and audio feedback, a personalized quiz, and methods to cope with stress and anxiety, we also must make it so that users are able to feel as if they are in complete control of their surroundings and environment. In this case, we need to design for a sense of control for the user. This can make users feel at-ease and more comfortable in their driving environment. Overall, for our new refined design direction, we are focused on designing for mindfulness by implementing scientific de-stressing methods through the emphasis on providing users a sense of control in their environment as they are able to choose and change their surroundings with the assistance of their smart device, cars, and sensors..

Appendix

Team Member Contributions:

Ashton

- Chose the supplies
- Created and filled out the Reimbursement Form
- Created the workshop powerpoint
- Took notes on observations during the workshop
- Took pictures and audio recordings during the workshop
- Created the powerpoint presentation
- Wrote the report

Abigail

- Chose the supplies
- Ordered the supplies
- Filled out the Reimbursement Form
- Created the workshop powerpoint
- Recruited available participants for the workshop
- Led the workshop
- Wrote the report