Assignment III Experiment Summary

Word Count - 1021

*Experiment Overview*

The literature on navigation is consistent in the finding that there are substantial differences in individual navigation performance – some people are simply better navigators than others. Equally, people differ in their preference for, or comfort with different environments due to their upbringing – someone raised rurally may feel more at home in the countryside than in a city.

The present experiment is a novel paradigm, aiming to assess a number of factors about participants. First, their habits in different navigational situations. Second, their attitudes towards pictures of different settings and environments, and third, their navigational decision-making, and whether they are willing to make riskier choices to reach a destination faster. Results may give insight into the relationship between navigational comfort and risk-taking in such a setting.

*Description of Procedure*

Participants, after giving informed consent and providing some brief demographic information, are asked to respond to three mandatory self-report questions. These aim to assess the frequency with which participants travel alone, and the degree to which they feel confident or afraid while doing so.

After providing their responses, they are then briefed on the first experimental task. The task consists of a series of images presented to them in a random order. Participants are asked to rate whether they have a broadly “positive” or “negative” reaction to the images, indicating their response via the “J” and “F” keys on their keyboard, respectively. After responding to an image, they are immediately shown the next in the series. The task ends when they have responded to all images.

Next, participants are briefed on and complete the second experimental task. This takes the form of a decision-making game, centering on navigation and route planning. Participants are informed that they must choose one of three “routes” to take, each with a different effectiveness (or speed) and a different chance of getting lost. These levels could be altered on a participant-by-participant basis, but by default they were as follows; the rural route had a moderate speed, and a moderate chance of getting lost. The city route had a long speed, but an equally low chance of getting lost. The motorway route, lastly, had a very high speed, but also a high chance of getting lost. Participants viewed information about each route, then selected one and locked in their choice.

Participants repeated this process for the specified number of trials – by default, four - after which they were automatically redirected to the debrief page.

*Experimenter’s Manual*

**Settings and Adjustments**

The experiment will run, if unchanged, with default settings. Experimenters should note that the following files and filenames are necessary for this to occur: the two image folders (gameImages and Images), the icon for the animated vehicle (“car.png”), the three .py files that contain the experiment’s code (“mainwindow.py”, “functions.py”, and “classes.py”), and finally the main UI file, “mazeparadigm.ui”.

Experimenters should note that, if they wish to change the values associated with the three available routes, they can do so by accessing the settings menu on the first page of the experiment (the consent form) using the password “admin123”. This password can be altered via the code, if experimenters have reason to believe greater security is necessary. If experimenters seek to change the number of times participants play the navigation game, they may do so on the same page by adjusting the “number of trials” value.

Other aspects of the program can be altered to suit needs through code and file organisation. If they seek to alter the number of images participants are presented in the first task, they may simply add the image files to the Images folder. The experiment will automatically cycle through all images inserted into the file.

**Data Dictionary**

The paradigm automatically generates and updates a CSV file containing experimental results, entitled “results.csv”. Experimenters should note that the number of columns correspond to default images, and default numbers of trials. If additional images or trials are added, additional columns will need to be, too.

**Name, Age, Gender, Education –** Participant responses to initial demographic questions. Education is a dichotomous variable, where True represents the subject being in full-time education.

**Walk Comfort**  - The degree to which the subject feels comfortable outside, walking by themselves.

**Walk Frequency** – The frequency with which participants walk or drive alone.

**Walk Fear** – The frequency with which participants feel afraid when walking or driving alone.

**P1-P5** – Participants’ responses to the image response section of the paradigm.

**Number of Trials** – The number of navigation game trials.

**Rural Rate / Loss Chance** – The speed rate and chance of getting lost for the rural route option.

**City Rate / Loss Chance** – The speed rate and chance of getting lost for the city route option.

**Motorway Rate / Loss Chance** – The speed rate and chance of getting lost for the motorway route option.

**N1-N4** – Participants’ route selections in the navigation game.

**Total Score** – Participants’ overall score at the end of the navigation game. This is computed as the total of the rates of each of their trials.

*Program Highlights*

The experimenter settings window on the first page of the experiment is notable, as it allows for quick changes to be made without alterations to the code. It also contains inbuilt protection against participants accidentally manipulating variables, as it cannot be accessed without a password. Such functionality improves the usability of the code – experimenters with less Python experience can use the intuitive UI to make simple adjustments.

The function which calculates the successfulness of the navigation trial, while not a particularly complicated algorithm, is extremely flexible. The use of the container argument allows the easy linkage of the aforementioned settings page with the function, as the settings page returns a container with formatting understood by the function.

The self-adjusting image label widget is of particular note when it comes to functionality and flexibility. The widget automatically runs, displaying and showing all images in the “images” file without repetition, until they have all been viewed – regardless of the size of the image folder. The widget stores and saves participant inputs, and can be linked to timers and labels to improve readability and aesthetics on the experimental page itself.