**Objective**

To investigate the range of variability in human choices.

**Method**

I chose nine participants to complete the Display/Control Observation form. The following table describes their backgrounds. I chose them because I was interested in finding out how they would answer these questions given their age. By this I mean I assumed that they’re most familiar with the dials of older car radios.

<table>
<thead>
<tr>
<th>Age</th>
<th>Ethnic</th>
<th>Sex</th>
<th>Background Characteristic</th>
</tr>
</thead>
<tbody>
<tr>
<td>52</td>
<td>Caucasian</td>
<td>Female</td>
<td>Mainframe systems</td>
</tr>
<tr>
<td>44</td>
<td>Black</td>
<td>Male</td>
<td>Mainframe systems</td>
</tr>
<tr>
<td>49</td>
<td>Caucasian</td>
<td>Male</td>
<td>DEC systems</td>
</tr>
<tr>
<td>47</td>
<td>Caucasian</td>
<td>Female</td>
<td>Desktop Support</td>
</tr>
<tr>
<td>Early 40’s</td>
<td>Caucasian</td>
<td>Male</td>
<td>Vendor tool support</td>
</tr>
<tr>
<td>Early 40’s</td>
<td>Caucasian</td>
<td>Male</td>
<td>Unix programmer</td>
</tr>
<tr>
<td>Mid 40’s</td>
<td>Caucasian</td>
<td>Female</td>
<td>Project Manager</td>
</tr>
<tr>
<td>Mid 50’s</td>
<td>Caucasian</td>
<td>Male</td>
<td>Unix &amp; Mainframe programmer</td>
</tr>
<tr>
<td>30</td>
<td>Caucasian</td>
<td>Male</td>
<td>JAVA/OO programmer</td>
</tr>
</tbody>
</table>
1. Make a darker photocopy
   The results say that 4 chose to move the dial clockwise while 5 chose to move
   the dial counter-clockwise. Yet, out of that result, 2 females chose to move the
dial clockwise and one chose to move it counter-clockwise. In this case, 67% of
the participants chose counter-clockwise and 33% chose clockwise.

2. Move the dial down
   The results say that 2 chose to move the dial clockwise while 7 chose to move
the dial counter-clockwise. Yet, out of that result, 2 females chose to move the
dial counter-clockwise and one chose to move it clockwise. In this case, 78% of
the participants chose counter-clockwise and 22% chose clockwise.

3. Move the dial up
   The results say that 3 chose to move the dial clockwise while 6 chose to move
the dial counter-clockwise. Yet, out of that result, 2 females chose to move the
dial counter-clockwise. In this case, 67% of the participants chose counter-
clockwise and 33% chose clockwise.

4. Move the dial left
   The results say that 1 chose to move the dial clockwise while 8 chose to move
the dial counter-clockwise. Yet, out of that result, all 3 females chose to move
the dial counter-clockwise. In this case, 89% of the participants chose counter-
clockwise and 11% chose clockwise.

5. Move the dial right
   The results say that 8 chose to move the dial clockwise while 1 chose to move
the dial counter-clockwise. Yet, out of that result, all 3 females chose to move
the dial clockwise. In this case, 11% of the participants chose counter-clockwise
and 89% chose clockwise.

6. Increase the number from 1 to 2
   The results say that 5 chose to move the dial clockwise while 4 chose to move
the dial counter-clockwise. Yet, out of that result, all 3 females chose to move
the dial clockwise. In this case, 44% of the participants chose counter-clockwise
and 56% chose clockwise.
The responses for the most part were consistent except for question 5, ‘move the dial to the right’. There were eight participants that chose to move the dial clockwise with the exception of one. This participant wrote his name on the form so I can safely say that it was a male. He had also indicated the numbers 1 and 5 on the images to help him decide where to turn the knob. I found this interesting because I wouldn’t have thought to turn the knobs in that direction. Yet, writing the numbers helped him decide how the controls worked.

Discussion

Regarding my observations about population stereotypes, designing controls, sample size, effective control design and further study; I believe that it requires more than a questionnaire of six questions to be able to thoroughly analyze the information.

Gender or age did not seem to make a difference in the way the questions were answered. In addition, despite the participants sharing a similar background such as their age, they seem to have learned certain behaviors and expected things to work in certain ways.

In regards to designing controls, given the data it is difficult to conclude how participants interpreted the move of the knob. In the first question, ‘make a darker photograph’ did the participants move the dial or move the arrow? Many answered counter-clockwise, but it might not have meant the same if some moved the dial and others moved the arrow. In any case, design controls at a glance do not ‘work’ as well until a user tries it (trial and error) and its use is learned. Visual design alone is not all that is needed for people to understand their purpose; words and phrases assist in providing the user with instructions. It may also indicate, as in this observation, that people experience the environment differently. Many of the participants were nearly same age and yet answered questions differently.

Given that some of the choices by the participants were relatively close to one another, I have to say that the sample size was adequate. I don’t believe that the data figures would change dramatically with more participants.

My thoughts about effective control design are that in this case they were not successful. The data shows that many participants might have interpreted the designs differently. Hence, due to their previous experience with controls or other similar instruments they applied that to this exercise. While, at the same time even when the majority of the participants marked clockwise or counter-clockwise for any question they may have interrupted the data differently.

It would be interesting to see further research conducted for this type of study. There are many stressful environments such as the medical field or aviation where errors could be prevented if controls and knobs were designed more effectively. This could mean the prevention of many fatal errors.

Conclusion

My final thoughts are that overall, the data seems to show that the interpretation of visual design or metaphors on paper is difficult. It’s also important to note that not discussing the data with the participants makes it difficult to understand the data. I would like to be able to engage in a dialogue with the participants and understand why they chose their answers. If I were to continue this study in the future I would discuss the answer with the participants in private.