Evaluation of a Driver Interface: Effects of Control Type (Knob Versus Buttons) and Menu Structure (Depth Versus Breadth)

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1 ISSUES
1. What are typical selection times & error rates for novice users & can times be predicted using a GOMS model?
2. How do selection times & error rates vary as a function of (a) menu structure, (b) control type, & (c) the location of the control and display?
3. What is the effect of driver age, sex, and practice on selection times & error rates?
4. How acceptable is the idea of an in-vehicle menu interface to drivers?

2 METHOD

<table>
<thead>
<tr>
<th>Factors examined</th>
<th>Control-Display Configuration</th>
<th>Control</th>
<th>Menu Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Both-Low</td>
<td>Cursor</td>
<td>Deep (4X4X4)</td>
</tr>
<tr>
<td></td>
<td>Both-High</td>
<td>Knob</td>
<td>Broad (8 X 8)</td>
</tr>
<tr>
<td></td>
<td>Separated</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Task (deep menus shown)

1. "... check the temperature outside the car"

2. Main Menu
   - Stereo
   - Climate...
   - Nav...
   - Vehicle...

3. Climate...
   - Fan
   - Temp
   - Vent
   - Air Filtering

4. Temp
   - Left...
   - Right...
   - Rear...
   - Outside...

5. "Beep!" (correct)
   - or -
   "Buzz!" (incorrect)

3 RESULTS

Histogram of trial times (seconds)

Mean = 9.14
Median = 7.07
Minimum = 1.27
Maximum = 87.28