ABSTRACT

The use of mobile health apps has been on the rise, as it allows the users to get their health information more conveniently. Many people are using their mobile health apps to track their health status (KC et al., 2021), but there are known issues with people being unable to use their health app effectively due to poor design.

There are some negative impacts for the users if they are unable to use their health app as intended (Wildenbos et al., 2019). If users are repeatedly failing to get their information they need, users will:

- Develop feelings of insecurity
- Be hesitant to explore the app for other functions, and
- Ultimately stop using on the app.

To mitigate these negative impacts, the present study examined how two design principles can impact users' performance and ratings of mobile health app displays.

- A Universal Design Principle of flexibility: design of products that can be used and experienced by all people to the greatest extent possible (Story, 1998).
- Gestalt's Perceptual Grouping Principle of simplicity: allow users to easily interpret and recognize the material presented (Smith-Graff & Fisher, 1999).

METHODS

This study employed a 2 flexibility (low, high) × 3 simplicity (simple, intermediate, complex) mixed design study:

- Flexibility = between-subjects, simplicity = within-subjects

Accuracy Scores on Comprehension Questions
- 8 questions for each pedometer app that require the participants to extract information from the interface
- (e.g., “In this app, are you able to look at the total distance walked for today?” If participants answered yes, a follow up question would appear, “What was the total distance for today?”)

Ease of use ratings
- System Usability Scale (SUS, Brooke, 1996)
- Intention of use rating
- Selected questions from Pasha and Indrawati (2020)
- (e.g., “I intend to use this pedometer app in the future”)

RESULTS

- 49 participants took low flexibility survey. 47 participants took high flexibility survey, with average completion time being 20 minutes.
- 51.1% of participants were from the age group of 26 – 35 years
- Participants in this sample were familiar with health apps with 92.7% indicating that their experience level with using health apps being “intermediate” or “advanced”
- A summary of the dependent measures as a function of interface condition is provided in Table 1.
- For accuracy, there was a significant main effect of simplicity, F(2,188) = 5.41, p = .005: Participants performed better with the interfaces intermediate in terms of simplicity, see Figure 1.
- For intention of use, there was a significant main effect of simplicity, F(2,188) = 4.69, p = .010: Participants reported higher intention to use ratings for complex and simple interfaces compared to intermediate interfaces, see Figure 2.

SAMPLE PEDOMETER INTERFACES

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Accuracy Score Mean (μ)</th>
<th>SUS Mean (μ)</th>
<th>Intention of Use Mean (μ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Flexibility</td>
<td>Simple (52.18)</td>
<td>51.67</td>
<td>3.66</td>
</tr>
<tr>
<td></td>
<td>Intermedi (56.89)</td>
<td>47.14</td>
<td>3.33</td>
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<tr>
<td></td>
<td>Complex (46.53)</td>
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<tr>
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<td>Simple (50.00)</td>
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<td>3.21</td>
</tr>
<tr>
<td></td>
<td>Intermedi (60.75)</td>
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</tr>
<tr>
<td></td>
<td>Complex (52.53)</td>
<td>47.32</td>
<td>3.52</td>
</tr>
</tbody>
</table>

Table 1. Mean and Standard Deviations for: Accuracy, SUS, and Intention of Use

CONCLUSION

The goal of this study was to examine how different levels of flexibility and simplicity would affect participants’ performance and intention to use a pedometer interface. For the mock-up interfaces of these, we found:

- Participants performed better for interfaces that were intermediate in simplicity
- Participants’ ratings of intention of use did not match performance
- More likely to use interfaces that were more simple or complex

Design Implications:

- Users’ preference and performance may not match (Bailey, 1993)
- Designers must exert care to balance their interface design in terms of simplicity
- User testing is still needed even when interfaces are designed according to best practices

REFERENCES


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Figure 1. Mean Accuracy Score
Figure 2. Mean Intention of Use Score