Overview

Persuasive technologies for promoting physical fitness, good nutrition, and other healthy behaviors have been growing in popularity. Despite their appeal, the evaluation of these technologies remains a challenge and typically requires a fully functional prototype and long-term deployment. In this work, we attempt to help bridge this gap by presenting a method for using heuristic evaluation to evaluate persuasive technologies. We developed a set of 10 heuristics intended to find problems in persuasive technologies that would affect persuasive elements, adoption, or long-term effectiveness of the technologies.

Persuasive Health Technology Heuristics

1. Appropriate functionality
2. Not irritating or embarrassing
3. Protect user’s privacy
4. Use of positive motivation strategies
5. Usable and aesthetically appealing design
6. Accuracy of information
7. Appropriate time and place
8. Visibility of user’s status
9. Customizability
10. Educate users

In comparison to Nielsen’s original heuristics, we hypothesize that a set of good persuasive health heuristics helps evaluators to find

1. More severe issues
2. More severe issues more frequently, and
3. More issues that are useful in improving persuasive aspects of the interface evaluated.

Technologies Evaluated

Mindblown

Mindblown is an online application that allows users to set short and long-term life goals and priorities and aims to build meaningful relationships between users. A user’s life is represented by a “Life Tree” whose branches represent life areas important to each individual—health, spirituality, relationships, leisure, lifestyle, finances, creativity, and career. On a branch, each leaf represents a goal or dream related to that life area.

MyPyramid BlastOff!

MyPyramid BlastOff is a game designed to educate children about the importance of healthy eating and physical activity. By demonstrating how children can select healthy food for their own diets, the game persuades players to make smart choices about eating and exercising in their own lives. The game simulates a mission to space in which players must fuel their rocket ship and charge their battery in order to reach Planet Power. Each food category is represented by a fuel gauge that fills up as a user adds food.

Study Design

Compile a master list of all usability guidelines and heuristics (a total of 130 heuristics)

Results

1. Number of Issues Found

<table>
<thead>
<tr>
<th>Category</th>
<th>Control (Nielsen)</th>
<th>Experimental (Persuasive)</th>
<th>Total Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severity</td>
<td>Rating</td>
<td>(# &amp; %)</td>
<td>(# &amp; %)</td>
</tr>
<tr>
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<td>Count</td>
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<td>8</td>
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<tr>
<td>1</td>
<td>Count</td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td>% Covered</td>
<td>67.0% (60/90)</td>
<td>60.0% (60/100)</td>
</tr>
</tbody>
</table>

While Nielsen’s Heuristics found more errors in total, Persuasive Health Technology Heuristics found more severe errors than Nielsen’s Heuristics.

2. Frequency of Severe Issues Found

Severe issues were found more frequently in both conditions. The main effect of severity rating was significant, F (4, 10) = 14.07, p < .001. The main effect of the condition and the interaction effect of severity and condition were not significant.

3. Types of Issues Found

All issues were categorized into eight different types of usability problems shown above. To maximize the validity of the categorizations, 10 people in the research team individually coded the issues and they were merged later.