Heuristic Evaluation of Persuasive Health Technologies

Julie A. Kientz^{1,2}, Eun Kyoung Choe¹, Brennen Birch², Robert Maharaj², Amanda Fonville¹, Chelsey Glasson², Jen Mundt² ¹ The Information School, ² Human-Centered Design & Engineering, {jkientz,eunky,bpbirch,maharr,ajf32,chlsy}@uw.edu, jen.mundt@gmail.com University of Washington, Seattle, WA, USA

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

Technologies Evaluated

Mindbloom



Mindbloom is an online application that allows users to set short and long-term life goals and priorities and aims to build meaningful relation-ships between

users. A user's life is represented by a "Life Tree" whose branches represent life areas important to each individual user-health, spirituality, relationships, leisure, lifestyle, finances, creativity, and career. On a branch, each leaf represents a goal or dream related to that life area.



for their own diets, the game persuades players to make smart choices about eating and exercise 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.





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

MyPyramid Blast Off is a game designed to educate children about the importance of healthy eating and physical activity. By demonstrating how children can select healthy food





heuristics)

Results

1. Number of Issues Found

			Cond	Тоти	
			Control (Nielsen's)	Experimental (Persuasive)	ISSUES
SEVERITY	4	Count	7	8	9
RATING	3	Count	17	23	31
	2	Count	34	26	48
	1	Count	11	5	14
TOTAL		Count	69	62	102
		% covered	67.6%	60.8%	100%

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

3. Types of Issues Found

Types	Example of each type of issues found			
Aesthetics	Color of webpage should entice the user to read while not distracting.			
Functional	There is no way to add more than one goal to a leaf			
Clarity	Couldn't figure out how to search for help by topic			
Persuasive	Feedback does not give any suggestions on improving			
Cultural	Female centered, not neutral			
Navigation	After creating a tree, I had to click around to figure out how to sign up for the trial			
Bug	User turned sound off, but interface still made noise			
Information	Presents false information			

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.

Computing for Healthy Living & Learning



2. Frequency of Severe Issues Found

persuasive technologies

		-	-					
		CONDITION						
		Con	ITROL (NIELSE	Experimental (Per				
		# OF Unique Issues (A)	Frequency (B)	Average Frequency (A/B)	# OF Unique Issues (A)	Frequenc (B)		
Severity Rating	4	7	13	1.86	8	17		
	3	17	30	1.76	23	38		
	2	34	43	1.26	26	35		
	1	11	13	1.18	5	7		
TOTAL		69	99	1.43	62	97		

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.

NUMBER OF ISSUES FOUND X CATEGORY OF ISSUES Control Group Experimental Group Aesthetics Functional Clarity Persuasive Cultural Navigation Bug

Persuasive Health Technology Heuristics found more issues relevant to persuasive, cultural, and information problems which are tightly related to the persuasive aspects of the interface.









