

Visual Interactive Personalized-Content Feedback in Acquiring Information: Its Influence on Health Behavior / Hadar Ronen

Abstract

There is overwhelming evidence of patients' low compliance with taking medication and keeping health related diets, although they have been told by physicians of the advantage of doing so. Furthermore, although there is an increasing trend towards greater awareness of the correlation between nutrition and health among the entire population, there is still a gap between knowledge and actually deploying healthy behavior.

Indeed, the health system is striving to present information to the public in a clear and visual way (using graphs, color emphasis of abnormal blood-test measurements, etc.). However, at this level of information-visualization, the information-consumer remains *passive*. The motivation of this dissertation is to find a way to encourage the information-consumer to be more *active* through information enquiring, and also as a result of it.

In this dissertation, I explore Visual, Interactive, and Personalized-content (VIP) feedback, as a novel method in a personal-information system for increasing a user's compliance with health care prescriptions. VIP feedback adds a level of interactivity to information-visualization, and in this way, encourages the patient to analyze their own personal data and act on it.

I hypothesize that VIP feedback positively affects intentions to adopt health behavior by affecting the users' sense of involvement, self-efficacy and comprehension, thereby affecting their intentions to change behavior.

In combining a design research approach in this dissertation I describe in detail the iterative steps conducted until reaching the final design of the feedback and the research.

I then test the mediation model through a longitudinal experiment in which the subjects used a nutritional information system that supplied them with personal medical information (n=155). This research explores the impact of VIP feedback on intentions to change behavior and the likelihood of long-term adoption. For this purpose I conducted a two stage experiment to understand the influence of VIP feedback over time. This fits in nicely with the notion of understanding why elements of the design affect behavior, in order to design better systems in the future (Klasnja, Consolvo, McDonald, Landay & Pratt, 2009). The area of healthy living promoting technologies and their ability to influence attitude and behavior is a growing area of interest (Hekler, Klasnja, Froehlich, & Buman, 2013).

The results support the mediation model, and present interesting implications for design. VIP feedback offers an opportunity to develop long-term intervention effects on users' behavior. This, of course, is not limited to the health arena. It can be found at work, education and environmental action, to name a few. In all these situations VIP feedback can serve as a vehicle for change. Moreover, the idea of designing HCI on the basis not only of a target behavior, but also on the mediating constructs leading to it, may be applied to other aspects of designing HCI.

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