Examining Usability in the Communication Design of Health Wearables

Extended Abstract

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ABSTRACT

This panel consists of six case studies that investigate how emerging contexts for use created by health wearables present UX designers with challenges related to agency, surveillance, and health outcomes, as wearables assess the body in new, potentially unforeseen ways.

KEYWORDS

Occupational safety, health and fitness trackers, biomedical narrative, smart jewelry, Western medicine, DIY, hearing aids, automation, nonhuman, feminism, surveillance

SIGDOC '17, August 11–13, 2017, Halifax, NS, Canada

ACM 978-1-4503-5160-7/17/08…$15.00
https://doi.org/10.1145/3121113.3121226

1 INTRODUCTION

Building on conversations in technical communication and medical rhetoric [1], panelists present six case studies that address concerns about agency, surveillance, and health outcomes in the UXD of health wearables, identifying challenges and opportunities for the designers and users of wearables (where wearables are defined as technologies whose primary functionality requires that they be connected to bodies [2]). In case studies of firefighters' PPE (personal protective equipment), diabetes wearables, smart jewelry and hearing aids, and health-tracking apps, panelists identify opportunities and challenges for the designers and users of wearables. Using the case study format, presenters address issues such as unequal access to wearable data, identify best

practices for wearable communication and UX design revealed by their analyses, and suggest ways in which the design of wearable devices can allow for greater user input and agency, ultimately leading to better health outcomes.

2 SIX CASE STUDIES OF USABILITY AND DESIGN FOR HEALTH WEARABLES

2.1 Automating/Informating Occupational Safety

Calling attention to the technological progress narrative [3] embedded within the rhetorics of occupational safety and health that surround firefighting, this case study interrogates how three modern wearable firefighting technologies have informated and automated firefighters' work [4]. This analysis foregrounds how PPE (personal protective equipment) designs have reified Taylorist theories of labor management that undergird the U.S. fireservice and argues that UX research can improve these designs to improve firefighters' occupational safety and health outcomes. The presenters emphasize four issues communication designers should consider for wearables slated for use in occupational settings: 1) privacy, access, and trust; 2) organizational cultures; 3) trust and confidence in existing and proposed designs; 4) and information and sensory overload for workers.

2.2 Impatient Patients: What Can Communication Designers Learn from DIY Diabetes Wearable Technologies?

This case study recounts the efforts of a group of parents of children with type 1 diabetes to modify and extend their children's devices in order examine how do-it-yourself (DIY) approaches could be useful for designers of wearable medical technologies. As wearable medical technologies take an increasingly prominent role in how healthcare is "delivered," pressure to shorten the development process for such devices has also increased so that users can make "faster, smarter health decisions" [5] and technologies can be designed to be flexible enough to meet diverse user needs. Communication designers have addressed concerns about development times and flexibility with user-centered design and participatory design processes. As such, they are uniquely positioned to be important stakeholders in efforts to positively affect the development, design, and use of wearable devices through a DIY approach.

2.3 Quantifiable Me: Fitness and Health Trackers and the Trope of Holisticism

The creators of wearable health-tracking devices frequently invoke a narrative of holisticism in describing and promoting their products. This case study analyzes communication strategies used on the website of the Bellabeat Leaf, a "smart jewelry" device targeted at women, showing how this narrative works as a rhetorical trope to reinforce Western medicine's dominant underlying ideology: the notion that disease and illness can be controlled.

2.4 Data Our Bodies Tell

This case study demonstrates how a feminist surveillance methodology can encourage critical technoliteracy practices by wearable designers. Focusing on data mining in the fertility app Glow, the authors draw on Frost's [6] critique of efficiency and Abu-Laban's [7] "surveillance of care" to show how wearable designers can apply an ethic of care that enhances user agency within mobile apps.

2.5 Collective Listening

By examining UX in smart hearing aids, this study offers a close examination of the everyday collaborations that take place within spatiotemporal networks of actors that include both humans and nonhumans [8]. It shows that interactions between human wearers and automated agents shapes communication through Bluetooth streaming, geolocation, and contextual sound adjustment. Of particular interest are the ways that hearing aids' automation alters communicative interactions and, on occasion, enhances the wearer's ability to render disability strategically visible or invisible through métis, or rhetorical cunning.

2.6 Contested Sites of Health Risks

While it is known that the risk of living as a person of color is great, few designers have considered the potential for technological interventions for those health problems associated with these risks. This case study suggests how new approaches to activity-tracker content might be used in pursuit of racial justice and the preservation of minority mental and physical health. To that end, we identify opportunities to employ activity-tracker data in risky encounters with law enforcement.

3 CONCLUSION

As the use of wearable devices increases, particularly for personal health and medicine, it is imperative for designers to craft user experiences that are mindful of the challenges these devices present to user agency, surveillance, and health outcomes. The case studies here represent an initial attempt to outline these challenges in health contexts as well as to identify solutions and best practices to guide designers in the wearable space.

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Title
SIGDOC '17 The 35th ACM International Conference on the Design of Communication

Halifax, Nova Scotia, Canada — August 11 – 13, 2017

Pages
286

Sponsors
SIGDOC ACM Special Interest Group for Design of Communications

Publisher
ACM New York, NY, USA

ISBN: 978-1-4503-5160-7

Conference
DOC Design of Communication

S I G D O C
Special Interest Group on
Design of Communication

Paper Acceptance Rate 61 of 77 submissions, 79.2%

Overall Acceptance Rate 450 of 852 submissions, 53%

Proceedings of the 35th Annual International Conference on the Design of Communication
2017, Halifax, Nova Scotia, Canada

The Association for Computing Machinery 2 Penn Plaza, Suite 701
New York, New York 10121-0701 USA

ISBN: 978-1-4503-5160-7
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