Theory vs. Design-Driven Approaches for Behavior Change Research

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Abstract
Designing and evaluating interactive systems for encouraging health behavior change at time leaves human-computer interaction researcher in a quandary: the methods and user-centered design philosophies favored in HCI can be incompatible with theory-driven approaches favored in healthcare research. The goal of this panel is to open a discussion about these tensions and to explore methods to reconcile them.

Author Keywords
Health; behavior change; theory

ACM Classification Keywords
H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction
In recent years, the CHI research community has turned its attention to designing and evaluating interactive systems for encouraging behavior change. Yet the methods and user-centered design philosophies favored in HCI can be incompatible with traditional theory-driven approaches used in healthcare research. In this panel, we will address these tensions and attempt to answer the question: *How can a theory-driven approach inform/enhance HCI behavior change research?*

As interactive systems for healthcare increasingly engage diverse populations – both in the people who are using these systems, as well as in those who are designing and evaluating them – it is crucial to reconcile the tensions between theory-based and user-centered design.

The panelists will describe their varied experiences and approaches to design, discussing what kind of systems are designed when taking a theory-driven (e.g. trans-theoretic, Health Belief Model, Ecological) perspective as opposed to a user-centered design perspective. They will also discuss challenges and best practices for interdisciplinary research in health and wellbeing.

Panel Structure and Discussion Topics

Through discussion—first between the panelists and then including the audience—we will identify common approaches, best practices, and future directions. To encourage audience participation and engagement, the majority of the panel session (approximately 60 minutes) will be structured for open participation. The intended outcome of this panel is to spark a discussion about the tensions between theory-based and user-centered design in human-computer interaction.

Rosa Arriaga will center her discussion on adherence and motivation. She will draw from her experiences with field trials of SMS-based mobile health deployments she and her team have conducted with children living with both asthma and diabetes. *Claudia Pagliari* will compare and contrast participatory design and theory-based approaches for mobile phone-based chronic disease self-management tools. Specifically, she will discuss the benefits and challenges of using social cognition theory, grounded in her experience with the design, development, and evaluation of an SMS intervention for diabetics. *Andrew Miller* will focus on engaging populations uninterested in heath. He will present challenges and opportunities encountered during the user-centered design, development, and pilot testing of a social network site intervention for adolescent fitness. He will discuss his use of participatory design methods and collaborative game mechanics to engage middle school students in thinking about health. *Erika Poole* will discuss how theory- and design-based lenses for research impact research focused on addiction. She will draw upon her experience with the design and deployment of an SMS intervention for smoking cessation. Given the unique challenges of designing and evaluating technologies for overcoming addictions, the metrics of intervention "success" may look much different depending on whether one takes a user-centered or theory-driven approach.

Expected Audience

We expect this panel will attract researchers and practitioners interested in healthcare and wellness. The panel themes also intersect with interests of the CHI sustainability and child-computer interaction communities.

Panelist Bios

Elizabeth D. Mynatt (moderator) is the Executive Director of the Institute for People and Technology, and Professor in the College of Computing at the Georgia Institute of Technology. Her research program Everyday Computing examines the human-computer interface implications of having computation continuously present in many aspects of everyday life. Her research contributes to ongoing work in personal

health informatics, computer-supported collaborative work, and human-computer interface design. Named Top Woman Innovator in Technology by Atlanta Woman Magazine in 2005, Mynatt has created new technologies that support the independence and quality of life of older adults "aging in place," that help people manage diabetes, and that increase creative collaboration in workplaces. Mynatt is a member of the SIGCHI Academy, a Sloan and Kavli research fellow, and serves on Microsoft Research's Technical Advisory Board. Mynatt is also a member of the Computing Community Consortium, an NSF-sponsored effort to engage the computing research community in envisioning more audacious research challenges.

Rosa Arriaga is a developmental psychologist and a Senior Research Scientist in the School of Interactive Computing at Georgia Tech. She also serves as the Director of Pediatric Research for the Health Systems Institute at Georgia Tech. Her research emphasis is on using psychological theory and methods to address fundamental topics of human computer interaction. Current research interests in the area of health include: how technology and crowdsourcing can aid individuals with Autism Spectrum Disorders (ASD) and their caregivers, how mobile solutions can improve pediatric chronic disease management and how lab-based technologies can be scaled and deployed to broaden their impact.

Andrew D. Miller is a Ph.D. Candidate in Georgia Tech's Human-Centered Computing program. With his advisor, Beth Mynatt, he studies how social computing technologies can affect everyday health behaviors. In his dissertation, "Social Tools for Everyday Adolescent Health", Miller is exploring the interplay between people's social sense of self and their identities as healthy and active individuals, and hopes to gain insight into the ways computing technologies can mediate and influence behavior change with respect to everyday health and wellness. Miller holds a B.A. in Cognitive Science from Occidental College and an M.S. in Human-Computer Interaction from Georgia Tech.

Claudia Pagliari is Senior Lecturer in Primary Care at the University of Edinburgh, where she leads the eHealth Interdisciplinary Research group and directs MSc programs in Health Informatics and Health Information Governance. Her research explores the design, diffusion, and impacts of healthcare ICT, from the perspective of clinicians, organizations, patients and society. She has authored a number of policy-relevant reports on eHealth for agencies such as NHS SDO (eHealth 2005), the Nuffield Trust (Personal Health Records 2007), NHS Connecting for Health (Impact of health IT on Quality and Safety, 2008, 2010) and the Wellcome Trust (Critical Issues for Electronic Health Records, 2009), in addition to empirical evaluations of clinician- and patient-facing systems. She is currently evaluating a range of telehealthcare interventions, clinical practice guidelines on patient access to records, and public acceptability of record sharing for research (as part of the Scottish Health Informatics Programme), amongst other projects. This is complemented by a strand of methodological research centered on optimizing interdisciplinary and academia-industry collaboration in eHealth.

Erika S. Poole is an Assistant Professor in the College of Information Sciences and Technology at Penn State University and member of the Center for Integrated Healthcare Delivery Systems (CIHDS). Her research

focuses applying social-ecological perspectives to the design and evaluation of technologies to improve personal health and wellbeing. Recent work includes a large-scale study of exergaming for adolescents, use of text messaging interventions for smoking cessation in adults, and development of guidelines for human-centered design and evaluation of mobile health technologies.