Collateral Realities of Wearable Health Technologies in the Workplace

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Abstract
In this paper I briefly discuss the development and implications of wearable health monitoring devices in the workplace where the primary stated motivation is promoting behavior change for preventative health. Although health monitoring in the workplace is not a new phenomenon there are a range of reasons why new *technological types* of health monitoring (such as sensor technologies) add to the complexity of new socio-technical arrangements relevant for CSCW research. I argue that in situating health as a pro-active experience we must also consider the collateral realities occurring when health technologies enter into the workplace.

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Introduction

Considering health in the workplace has developed from physicians visiting mills and factories, to a broad plethora of workplace health programs present in most workplaces today [1]. Recent developments of new sensor technologies can be used to monitor employee behavior, for example location and movement tracking to simplify work practices [2]. Many companies are increasingly introducing wearable technologies to monitor employees in the workplace, not only optimizing work practices but seeking to monitor and improve health [2]. However, few researchers have paid attention to this development. As such, "… there is a lack of knowledge of how ICT is utilized in primary prevention programmes at workplaces and how its utilization affects social issues" [4]. To address this we are currently designing a project to study the development in a Danish workplace context.

Collateral realities

The notion of 'collateral realities', as proposed by Law implies empirical works and understandings of "how realities (and representations of realities) are assembled in material-semiotic relations at a particular place, moment, and occasion" [3]. More concretely this position allows me to look carefully at the practices of employees and of the workplace in order to see the realities that are being done, and realities that are mostly unintentional [3]. Law is particularly interested in how realities are being done, how they emerge through practice and I will extend this analytical focus to encompass everyday encounters with the step-counter in the workplace and discussion of these amongst colleagues. The aim of the notion of collateral realities is not to criticize, trivialize or in other ways negatively approach the practice under analysis. On the contrary, the goal is to "ask how these talking and meeting practices work to assemble a putative reality" [3]. Though developed primarily as a methodological lens, the notion of collateral realities points to ways to conceptualize practice as not coherent, allowing for contradictions as an inherent feature of human decision-making. In this view practices work by enacting different versions of reality often incidentally and without pre-determination. This allows us to consider workplace health tracking policies and practices as pro-active experiences at the same time as these may at times result in a range of positive and negative unintended consequences.

I hope to spark discussion of how to better engage in and understand implications of these developments, with the notion of collateral realities in mind.

Established issues

Various strands of research have touched upon the area of health monitoring in the workplace, and from these I highlight two major issues.

Competing discourses

Workplace health programs precede the age of wearable health monitoring devices. "Early workplace health research was concerned with the links between work-related exposure and disease. Such research was successful in establishing causal relationships between asbestos and mesothelioma, and benzene and some cancers" [1]. Although not looking at recent technological developments, Allender et al. introduces a particular point of view of modern health program, showing how a health program in a company reveals two types of discourses- one of lifestyle and one of safety. "While safety discourse is concerned with

specific, discrete physical exposures to harmful agents within the workplace, lifestyle discourse takes an interest in a wide array of aspects of the worker's life in the name of the workplace" [1]. Allender et al. make the case that the competing discourses "may have negative implication for the practice of workplace health and thereby the health of workers" [1]. Adding to this development, I argue that there is reason to believe that as more stakeholders enter the market of health sensors in the workplace, discourses will only open up to further competition. Considering these competing discourses provides one way to understand collateral realities.

Data-fusion and doubtful inferences

Imagine the wealth of sensors and what they collect about our everyday lives, from driving records to exercise and sleep patterns, and what they reveal about us. Sleep patterns (which, for example, FitBit records), have "been linked to poor psychological well-being, health problems, poor cognitive performance, and negative emotions such as anger, depression, sadness and fear" [5]. This information could prove useful to employers, whether evaluating current employees, or in the evaluation phase of candidates for new positions. CVS Pharmacy has even introduced a monthly fine, if employees fail to record and deliver "information about their weight, body fat composition, and other personal health metrics on a monthly basis" [5]. These are all examples of data-fusion, introduced by health monitoring in the workplace.

But there is reason to be cautious about reaching such conclusions: "Fitness may not predict creditworthiness; driving habits may not predict employability. We don't know for sure" [5]. Ultimately, the candidate applying for a job position, or the employee under scrutiny, might be punished for something their data reveals about them- on uncertain grounds. Ironically, one could imagine that knowing that your sleep pattern is going to be evaluated at your next meeting with management is likely to infer sleepless nights. Thus opportunities for data-fusion can result in incidental collateral realities.

Empirical study

Following the theoretical notion of collateral realities we must always proceed empirically. We will conduct a study of a bi-annual nationwide step-counting campaign in Denmark, which advocates for workplaces to sign up to participate in a three-week competition. Colleagues sign up as teams, and report their counted steps at the end of each day. For 11 out of the 21 campaign days, all team members must walk at least 10.000 steps to enter the final round and thereby have a chance of winning a prize in the final draw. This simple pedometer sensor is one example of introducing health technologies in the workplace. It is also an example of collectively introducing health monitoring, as the initiative seeks to encompass as many employees as possible.

Some cases of workplace health programs promote the use of intranet or social network sites to encourage evolvement and sharing of experiences with colleagues and managers. This is also present in the campaign under investigation, as employees can follow the progress of the campaign on an official Facebook page managed by the campaign organizers.

In a three-year study of a workplace in Finland, Nikayin et al. investigated ICT use in primary prevention programs. They conclude that: "The social atmosphere

at work could be harmed if some people actively take part in social media challenges and others are left out" [4]. With a range of sensors and developments of workplace health programs likely to take place, the need to understand social impacts is greater than ever, in order to avoid detrimental social outcomes of well-intended initiatives.

Further implications and research

On an ending note, one could ask: what are the consequences of these developments and what are the issues in this of particular interest for CSCW?

CSCW is concerned with design of technologies for the workplace and design of technologies for health. What we are currently witnessing is that these are getting combined and that there are issues beyond personal health that are at stake. This study will begin to address these issues. I would like to speak at the "Moving Beyond e-Health and the Quantified Self workshop" to highlight this important area of inquiry, to present my initial empirical work and spark discussion of this theme. I look forward to feedback on this study and the notion of collateral realities.

References

[1] Allender, S., Colquhoun, D., and Kelly, P. Competing discourses of workplace health. *Health (London, England : 1997) 10*, 1 (2006), 75–93.

[2] Goldberg, S. Wearable devices can be used by employers to track worker health and safety. *Business Insurance*, (2014), 11–13.

[3] Law, J. Collateral realities. *The politics of knowledge*, December 2009 (2009).

[4] Nikayin, F., Heikkilä, M., de Reuver, M., and Solaimani, S. Workplace primary prevention programmes enabled by information and communication technology. *Technological Forecasting and Social Change*, (2014), 1–7.

[5] Peppet, S. Regulating the Internet of Things: First Steps Toward Managing Discrimination, Privacy, Security & Consent. *Texas Law Review, Forthcoming*, (2014).