

Training to self-care: fitness tracking, biopedagogy and the healthy consumer

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Training to self-care: Fitness tracking, biopedagogy and the healthy consumer

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Figure 1: Fitbit dashboard showing tiles for food, steps and water: part of the app interface. 254x190mm (72 x 72 DPI)

Review Only

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Figure 2: Fitbit One's flower.
254x190mm (72 x 72 DPI)

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Title

Training to self-care: Fitness tracking, biopedagogy and the healthy consumer

Abstract

In this article, we provide an account of *Fitbit*, a wearable sensor device, using two complementary analytical approaches: auto-ethnography and media analysis. Drawing on the concept of biopedagogy, which describes the processes of learning and training bodies how to live, we focus on how users learn to self-care with wearable technologies through a series of micropractices that involve processes of mediation and sharing their own data via social networking. Our discussion is oriented towards four areas of analysis: data subjectivity and sociality; making meaning; time and productivity; and brand identity. We articulate how these micropractices of knowing one's body regulate the contemporary 'fit' and healthy subject, and mediate expertise about health, behaviour and data subjectivity.

Keywords

Biopedagogy, data subjectivity, digital health, Fitbit, imaginaries, quantified self

Introduction

In recent years, tracking devices and wearable sensors have come to occupy a key locus in the mediation of the healthy and responsible citizen. Application-based tracking services, such as *Map My Run*, and tracking sensors like *Fitbit* have become popular elements of consumer culture. Devices such as *Fitbit* are often framed in policy and in the media as enabling significant moves towards a healthy lifestyle, despite the fact that they are at the leisure end of a health-to-leisure spectrum of medical devices. They come together with the promotion of individual responsibility in health care policy (Beck and Beck-Gersheim, 2001) and 'healthy living' (Bunton *et al.*, 1995). In this context, how is self-care being learned with the use of digital apps and wearable technologies? What kinds of subjectivities do self-tracking and data quantification enable? Drawing on the concept of biopedagogy, which describes the processes of learning and training bodies how to live, in this article, we examine *Fitbit*, a wearable sensor device, from two different analytical approaches: auto-ethnography and media analysis.

When it comes to *Fitbit* and other wearable devices there is more at stake than behavioural change and individual wellbeing. As we argue in this article, these are normative devices teaching users how to be good consumers and biocitizens. Users are offered training in self-care through wearable technologies through a series of micropractices that involve processes of mediation and

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4 sharing their own data via social networking. Importantly, they learn to incorporate forms of
5 ubiquitous computing and data literacy in their lives. This article focuses on how such new
6 micropractices of self-caring and knowing oneself are disseminated through the media and the
7 *Fitbit* platform itself. By employing the concept of digital biopedagogy we articulate how these
8 micropractices of knowing one's body through mediatisation and data regulate the contemporary fit
9 and healthy subject.
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14 Wearable devices are practiced as digital technologies of the body. They are also media texts, and
15 therefore present an added layer of analytic complexity. Therefore, it becomes necessary to frame
16 them as both artefacts with practices and as communication devices that address users/audiences
17 in particular ways. Our approach to *Fitbit* encompasses both the experiential dimensions of
18 practising a wearable technology, and its symbolic and meaning-making dimensions as a digital
19 communication device. This allows us to explore the idea of wearable technologies as pedagogic
20 technologies that incorporate forms of training and knowledge production and which, in this
21 process, create new meanings about the technology, as well as expert/lay person identities. *Fitbit's*
22 accumulation of personal data and use of social networking technologies indicate a shift of
23 responsibility from the medical expert to the tracking technology and to the individual. Operating
24 both through promotional media discourse about the device, and by the multiple address of the
25 device as itself a discursive agent, this shift is often accentuated and articulated as a form of
26 democratisation and individual empowerment.
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36 ***Fitbit* and Biopedagogy**

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39 "My *Fitbit One* flashes that it will be out of battery soon and I am rushing to get to the
40 charger and to a chair before it goes off. I'm worried that I will miss steps, that the graph will
41 be incomplete, that there will be gaps. It seems that this tiny little piece of metal, gum and
42 LCD screen has brought out an inner obsessiveness that I didn't know about, a
43 compulsiveness to keep logs tidy and up-to-date. I genuinely crave for clean diagrams."
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47 (field notes)
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50 This auto ethnographic field note introduces some our key questions: Why might people worry
51 about their devices and have compulsive attachments to data visualisations that are continuous
52 and do not contain information gaps? What else does using *Fitbit* teach people, and what have we
53 learnt as researchers through different approaches?
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57 *Fitbit* offers a range of wearable devices that can be attached to the wrist or clipped onto clothing.
58 Daily use of *Fitbit* typically involves wearing the device throughout the day, while the device
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monitors steps walked, floors climbed and calories burned. In some models (such as the model used in this study, Fitbit One) *Fitbit* offers additional features, such as sleep monitoring. The user needs to then connect to the personal interface (referred to as the Dashboard) in order to upload the data logged by the device to the cloud-based system. This can happen through a website or mobile app; once logged in, the user can access charts with information of daily activity and compare their data over time or to other *Fitbit* users. Periodic synching is necessary for this update. In our study, the autoethnographer connected to the cloud at the end of every day. In addition to measuring data sensed directly by the device, by logging into the Dashboard the user can also enter details of food consumption and mood. The company suggests eating a specific amount of calories, and walking a minimum of 10,000 steps a day in order to reach personal weight loss goals.

(Figure caption)

Figure 1: *Fitbit* dashboard showing tiles for food, steps and water: part of the app interface

In what follows, we focus on the mode of address of digital health promotion and employ the concept of biopedagogy. Our interest is with the subjectivities that are being produced by the discourses that circulate in the media, and enabled through the design of the *Fitbit* interface of peripherals. Biopedagogy has been explored in health sociology to account for the ways in which truth and meaning about bodies are being constituted in multiple sites, such as policy documents, health promotion and the media (Wright and Harwood, 2009). Drawing from Foucault's classic work on biopower, and more recent work on pedagogy (see Bordo 2003; Bernstein 2001, 2008), Jan Wright and Valerie Harwood's edited volume on biopolitics and obesity focuses on the cultural beliefs, policies and other regulating and disciplinary practices that constitute pedagogies about how to live. Concentrating more on the media, Genevieve Rail and Michelle Lafrance (2009) also use biopedagogy to analyse biopower when they account for the ways in which viewers of the reality television programme *Nip and Tuck* are instructed how to think about the fat body. In these contexts biopedagogy has been used primarily to think about how bodies are pathologised and disciplined and, more recently, how policy and market work in tandem to create the normative fit and productive biocitizen (Rail and Jette, 2015). In this paper we are informed by these existing studies but we are also concerned with the biopedagogy of digital technologies and apps that operate in a pre-emptive mode. Like reality television and other cultural sites, *Fitbit* tracking devices mediate the body, prescribing what is normal and acceptable, including normal weight and weight loss through exercising and calorie restriction. The promotional media and the interface of the consumer device constitute biopedagogies about how to prevent the pathologised body and reproduce dominant discourses about the 'fit' and healthy body. Our attention is directed to the

tensions between media representations, user experience, and knowledge-making about health promotion wearables, against the backdrop of economic cuts, austerity and the reshaping of the health sector throughout Europe. In this context, the rhetoric of crisis in the healthcare sectors, and fears that care may become unavailable, invite new modes of control over the body and health. Further, as we discuss in our analysis of the interface, *Fitbit* is designed to address users and consumers as learners of technology, instructed to incorporate self-logging in their everyday lives, making everyday practices productive. Thus, biopedagogy also relates to the new subjectivities that emerge in relation to what has been recently termed as 'datafication' (Mayer-Schönberger and Cukier, 2013) and 'dataveillance' (van Dijk, 2014).

Reviewing wearables: communication systems and social technologies

The emerging body of research around wearables has registered the centrality of locative devices, smart phone apps (Lupton, 2014b), and data repositories for healthcare (Oudshoorn, 2011; Mort et al., 2013). *The Quantified Self (QS) is one example of a community of people who use wearable devices in order to log personal information and improve various aspects of personal life, such as mood, physical and mental performance, or other aspects of everyday life, such as air quality* (Bossewitch and Sinnriech 2013, X 2014, Shull et al 2014). Insurance companies and employers routinely introduce wearables in the workplace as part of the well-being and health package deals they offer to their employees (Olson and Tilley, 2014). Although fitness and well-being wearables such as *Fitbit* are not intended as medical devices per se, they are part of an apparatus of digitised health promotion (Lupton, 2013; 2014a). Digital health promotion strategies that largely emphasise individual responsibility disregard the social, cultural and political dimensions of digital technology use (Lupton 2014). We examine these social dimensions here, and indicate some of the implications of promoting self-reliance in relation to public health.

Wearable sensor technologies bring new challenges but also have continuity with older systems. They intersect with biometrics (measurements of the body), which could also include facial recognition, body temperature and perspiration levels. However, biometrics have been cast as dystopian surveillance technologies and received explicit criticism for the way in which they objectify bodies, with their limited set of biometric indexes (Magnet 2011). Although these issues also apply to health promotion, here our focus is different. *Fitbit* wearables are central to what Deborah Lupton refers to as a 'data utopian discourse on the possibilities and potential of big data, metricisation and algorithmic calculation for healthcare' (Lupton, 2013: 14). Wearables are attached to imaginaries in which self-surveillance offers agency (Mann 2005), and a utopian vision of a body that might escape pathology, if it is paired with technological expertise.

Methods

The media analysis includes an analysis of the interface, and textual analysis of the promotional material. Initially, we undertook an exploratory textual analysis of news media of a total of 140 articles during a one-year period (April 2012-2013), which were clustered around health, leisure and lifestyle sections, as well as trade press¹. We aimed to identify dominant, ambivalent and oppositional framings and meanings attributed to *Fitbit* through discourse analysis. We identified the language used to construct the device as meaningful, and the subject positions offered through these formulations. We derived the sample by searching for 'Fitbit', 'wearable' 'tracker' and 'sensor' as key terms through the Nexis news database. Of these articles only three significantly challenged the promotion of *Fitbit* as a 'cool' new device to help manage and control weight and wellness.

From the initial textual analysis it became evident that it was important to understand how the device can be used in everyday life, the subject positions that are enabled when bodies connect and interact with the technology, how the utopian/dystopian narratives in adopting wearable technologies map out during daily use, and how other key claims about expertise and knowledge are communicated through the interface design of the device. The textual analysis was thus complemented with an autoethnographic analysis and an interface analysis of *Fitbit*. The interface analysis involved examining the smartphone app, the device screen and the website, which are its key modes of communication and knowledge production.

For the small-scale auto-ethnographic methods (Bassett, 2012, Ellis and Bochner, 2000; Ellis, 2004) X, one of the authors used the *Fitbit* device and logged everyday physical activity, including sleep, for a period of three months. Auto-ethnography seeks to analyse personal experience as a source of knowledge and it privileges the self, situated in a particular cultural context, as a source of narrative. This was particularly relevant here since the use of self-logging technologies is about self-improvement. Daily use of the device included wearing it during the day and during sleep; trying to meet the manufacturer's generic suggestion to walk 10,000 steps per day; and logging into the personal interface (Dashboard) at the end of each day to check the data visualisations of the activity that had been logged. The autoethnographer joined a community of *Fitbit* users, which served as a common cultural identity. She kept reflexive ethnographic notes (quoted in this paper as field notes), which focused on how her understanding and approach to her own data and bodily functions changed with the use of *Fitbit*. These notes were developed further with the following key questions as guides: what kinds of knowledge are users invited to produce with the interface; how does the interpretative framework prescribed by the device allow users/consumers to make meaning about their own data, and what kinds of stories can they tell about themselves?

The combination of media analysis (interface analysis and textual analysis of news/promotional material) with autoethnography was important in order to approach the device and its operation as part of a wider promotion for digital health.

Analysis

Fitbit enables a range of meanings, literacies and forms of knowledge that are central to shaping certain subjectivities and consumer behaviours. Self-tracking with *Fitbit* involves a set of micropractices through which self-care is normalised as the way to be fit and healthy. These involve learning how to operate the device and how to make sense of the data, and they constitute a form of training.

a) 'You can get this!' Everyday coaching and making data social

In media coverage *Fitbit* appears overwhelmingly as an *app*. The terms 'gadget', 'device', 'gizmo' and 'wearable' are all used, but the term with the highest incidence is *app*. Much of the news coverage that we investigated deployed puns such as 'appy New Year'; 'appy days'; 'if you're appy and you know it', in the headlines. Through this language, an ecology of mobiles, smart phones and wearables is evoked. This framing helps to locate the *Fitbit* as a dimension of digital culture and to emphasise it as a networked object.

In use, the screen of the device worn on the body displays numerical information about fitness activity, such as steps walked, floors climbed, and calories burnt. In addition to this information, the screen periodically displays messages that aim to create a sense of connection with the user, and at the same time, establish the device in its role as a sports-trainer (for instance 'love ya Mary' or 'you can get this!'). This display of motivational messages on the device screen and on the interface dashboard introduces a form of coaching, which is ongoing even when the device is not actually connected to the wireless interface.

The offline sociality of motivational messages is complemented with what has become standard online connectivity: the app and website are similar to others (activity tracking, calorie measuring) in their use of social networking functions, such as profile, friends, and groups (see boyd and Ellison 2011 for a thorough analysis of these functions). These social networking functions, and the basic communication on the screen of the device, are integral aspects of how knowledge about the body and the technology is acquired and exchanged through the *Fitbit* interface, and a key way in which health is digitally mediated.

Since self-measurement is the focus of the *Fitbit* interface, it could be said that sociality and

connectivity are not directly necessary. Therefore the design features that enable sociality and connectivity in the interface could be considered as a marketing strategy that renders *Fitbit* 'as if' social: the social networking elements are used to render the interface attractive to users, when the primary aim, as with other similar health-related businesses and cloud-based tracking devices, is the collection of personal data from the user (see Atzori et al 2014). Indeed, *Fitbit* prompts users to consent to share their recorded data with the Microsoft Health Vault (<https://www.healthvault.com/gb/en>), which is a central node for sharing health information on Windows 8. Currently *Fitbit* provides interested users with an application program interface (API) should they wish to download their raw data but premium membership is required. However, making the data meaningful in another context requires good technical knowledge. Thus *Fitbit* offers a data subjectivity that is 'social' but limited. It mainly teaches people how to be subject to data, or data participants, while it offers a possibility of empowered data subjectivity.

b) Self-tracking is fun: numbers and metaphors

The user is presented with information about their fitness in two ways: through an interpretation of the quantified data input and manual data-entry in the form of infographics and text (see Figure 1); and through the game features, which come in the form of badges and levels. For example, the *Fitbit One* depicts a flower that grows bigger the more active you are (Figure 2).

(Figure caption)

Figure 2: Fitbit One's flower.

The analysis of the data is statistical and cumulative. Bodily information about weight, age and height is provided by the user and can be shared with other users with the 'friends' function. The range of information that can be shared with friends in *Fitbit* is determined by the platform (food, activities, weight, sleep, mood, allergies). A 'Journal' feature allows for diary-type prose content to be recorded and shared. The diagrams display the average score since the beginning of the use, as well as peaks and lows of an activity during the same day. However, these infographics cannot be further manipulated or read in much detail. *Fitbit* allows for an accessible and limited mode of knowledge acquisition and subjectivity, which is playful and 'fun'.

Quantified accounts are expressed through numbers, which are made meaningful through contextualisation and interpretation. *Fitbit* offers a strong interpretative framework and visual interface with the online account. This way it creates a set of visual cues and narrative elements for the user to interpret these numbers. It compares user measurements to certain targets, either set through *Fitbit's* health promotion formula, (10,000 steps daily, two litres of water) or by the user as goals. These are illustrated through real or fictional images. For example, during the auto

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4 ethnography, climbing an estimated height of 16 building floors was represented as climbing the
5 height of Godzilla. With a film reference and a comparison to a fictional creature, *Fitbit* aims to
6 enhance the experience of self-tracking by providing an additional path to self-understanding and
7 pleasure from the user's engagement with data. The key framing here is that learning to self-track
8 is fun and that fun is a new way of dealing with the 'serious' world of health.
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13 *Fitbit* further cultivates sociality and competitive play with the use of badges and levels. These
14 operate as motivational tools and are a recognisable marketing strategy, in which game elements
15 (for example, reward structures, positive reinforcement and challenges) are integrated in non-
16 gaming contexts (see Zichermann and Cunningham 2011 for more about 'gamification' as
17 marketing strategy). There is a new generation of immersive running games that aims to motivate
18 behavioural change in users. Game design in healthcare in particular aims to encourage users
19 towards a model of self-management (see Swan 2009). This element of gamification of everyday
20 practices that characterizes *Fitbit* is common in self-quantification (Till 2014).
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27 The sociality and motivational cues offered by *Fitbit* are only generated by compliance. While
28 learning about oneself appears to be social, a form of camaraderie, in fact it introduces what Rail
29 and Jette have called 'neo-authoritarianism' (2015: 328) in the shape of a digital coach. There are
30 no badges or motivational prompts for inactivity or missed data, but there are red warning zones in
31 the infographics for failing to meet consumption and activity targets. Although, in other platforms,
32 users rely on paid subscriptions for punishment if they do not train enough or overeat (Cederstrom
33 and Spicer, 2015), in *Fitbit* the emphasis is not on punitive language or warnings; it is on reward,
34 and motivation. The use of fun and play, and the emphasis on positivity is also a way of navigating
35 the threat of an implicit dystopian imaginary in which health care is unavailable. The connected,
36 continuous collection of data from sensors and the sharing of these data in social networks are
37 instrumental for the operationalization of this model, and interface design is key for adoption in
38 everyday life.
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45 46 47 **c) 'A gap in my graph!' Temporality and learning to be productive**

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49 *Fitbit* generates data through a selection of specific points so a judgement about what counts as
50 productive biological information is built into the design of the device. *The Sun's* (highly popular UK
51 redtop newspaper) assessment was that of 'a slimming aid' explaining that 'it counts the number of
52 steps you take each day and converts the data into calories burnt'. This way of characterising
53 biological data – as generated by counting walking, running, biking and swimming activities -
54 together with calorie intake and weight measurements is the feature of *Fitbit* that is most dominant
55 in media coverage. It is represented as a device that will manage body weight and active lifestyle
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4 through the mechanism of measurement, saving time by collecting data. A trend in the January
5 2013 coverage, picking up on press releases, was to link the device to getting more active after
6 Christmas. Some articles picked up on the promise that *Fitbit* also offers a route into a health
7 revolution, or links to a quantified-self movement, by referencing the capacity to put the *Fitbit*
8 together with other databases. However, these references were rare and although *Fitbit* was used
9 to anchor a prospective vision it stood in as sign for this future vision rather than providing
10 evidence for such a system.

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16 “Wearing the Fitbit has made me aware of my day and night cycles and temporal rhythms in a
17 different way. Although monitoring bodily activity remained in the domain of the technology, I
18 had an extra responsibility of wearing the *Fitbit* device at all times. My perception of time
19 changed. It became the time of the diagram, the time of continuity and bundles of activity.
20 When I failed to transfer the device from one pair of trousers to another, and in the meantime I
21 climbed stairs a couple of times, this continuity was spoilt, there was a gap in my graph, like a
22 gap in my performance.” (field notes)

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28 These gaps in performance during X’s experience of using *Fitbit One* registered as anxiety
29 accompanied with thoughts such as ‘what was I doing during this time?’ In ‘Pressed for time’, Judy
30 Wajcman (2014) suggests that the acceleration of technological innovation in digital capitalism has
31 made us feel that we are short of time in the increasingly busy lives we are leading. Multitasking,
32 she explains, with digital devices has made leisure time disappear. Indeed with *Fitbit*, becoming
33 and staying fit and healthy is a task that occurs around the clock because the collection of data
34 takes place during work, leisure and sleep. No time is wasted; all time is productive, as long as you
35 are alive to generate biological signals. From X’s experience of using *Fitbit*, she observed that
36 although *Fitbit* could have been useful in the long term with being mindful about the body, during
37 the three months of use things just felt busier, as if there was always a task at hand. Arguably,
38 doing auto-ethnography for a research project expanded working hours and acknowledging this
39 context of monitoring is important:

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46 “Would I have felt that I was excelling in working performance even when I used *Fitbit* after
47 the time period of data collection for the research project? I continued using *Fitbit* after the
48 autoethnographic period ended. Self-tracking *correctly* (without data gaps) felt good – I felt
49 a sense of accomplishment.” (field notes)

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52 A desire to be a ‘good’ monitoring subject (which in practice meant recording movement, climbing
53 steps and keeping mobile during the day) was not only triggered by loyalty as a working
54 researcher; as Wajcman (2014) notes, being busy, harried and short for time is a form of status
55 amongst middle class professionals in contemporary digital capitalism. Being busy with self-
56 quantifying and staying fit is a reassuring and rewarding form of capital, which might explain why
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4 people happily and voluntarily chose to labour and be productive as a lifestyle, outside working
5 hours (cf Gregg, 2011). Quantification is also a form of mediation between individual workers who
6 do not connect in other ways in conditions of neoliberal precarity (Moore and Robinson,
7 forthcoming). Thus being a productive subject with *Fitbit* concerns both the production of one's own
8 health, through an imagination of being proactive, and also the production of meaningful data.
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10 Continuous productivity is a key element of data subjectivity.

11 12 13 14 15 **d) 'The future is here': Learning about the brand**

16 In addition to self-knowledge about fitness activity, *Fitbit* encourages users to become more
17 knowledgeable about the *Fitbit* technology and brand, and therefore contribute to building a strong
18 consumer/business relationship. The Community panel, perhaps the most social of all *Fitbit*
19 elements, supports participation in discussion threads that relate almost exclusively to the use of
20 the device, health, diet and medical discourses. So as pedagogic technologies, fitness wearables
21 affirm self-logging, and behavioural change, whilst facilitating belonging in both fitness and techno-
22 savvy networked knowledge communities.
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28 In UK print news, coverage occurred primarily in feature and review sections, and largely consisted
29 of reproductions of press releases from consumer electronic shows and from *Fitbit* and its
30 distributors' promotional material. Thus, most material was positive in some way. In much of this
31 coverage, big visions were laid out so that *Fitbit* often operated to anchor much grander visions of
32 innovation and futures. Headlines and framings included: 'Wearable revolution' 'revolutionising
33 healthcare' 'electronic health record revolution' 'the future is here'. These stories ranged through a
34 spectrum of prospective visions about medicine, or the consumer electronics market transformed,
35 while referencing *Fitbit* as an example.
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42 The *Fitbit* brand identity then is, on the one hand, a fun, cool gadget and, on the other hand, part of
43 a vision of electronic health records, telemedicine and big data. The following quote from a trade
44 press article in which *Fitbit* is promoted as 'pre-wired for the electronic health record revolution' is
45 from *Medical Marketing and Media* under the headline 'Devices and Diagnostics: The App Avant-
46 Garde':
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49 "one of the advance guard of a new breed of medical device-one that's part app and part
50 gizmo and interfaces with smartphones to allow patients with chronic conditions like
51 diabetes an easy, DIY way of monitoring their health and sharing that data with their
52 doctors. It's a tool tailor-made for this era of Big Data, empowered patients and ever fewer
53 primary care physicians, who have less time." (Arnold, 2011)
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59 This broad vision of 'empowered patients' comes from the USA, but is also taken up in the UK and
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4 European contexts, where a vision of empowered patients comes together with cuts in public
5 health care resources. Health and medical sectors are looking to digital media to decentralise and
6 individualise the costs of health care. This reformulation of the citizen/consumer as a prospective
7 informed patient operating in a hopeful economy of biological citizenship has been well
8 documented in the sociology of health and medicine (Rose and Novas, 2005; Rabinow, 1996). The
9 critical literature on obesity, particularly Wright and Harwood (2009), examines how this dovetails
10 with the reduction in public health care budgets.

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16 The *Fitbit* vision is thus part of two broader intersecting discourses. First, the self is made up in part
17 through personal engagement with knowledge about biology. In this discourse of biological
18 citizenship, a key issue is the type of most relevant biological knowledge to assist in a project of self-
19 making. What data should be collected and how can it be interpreted? *Fitbit* and other tracking
20 devices compete for intelligibility of data and interpretation, and embody decisions about what
21 biological data points are relevant. In this sense, they already offer forms of interpretation and
22 meaning making, like more traditional media texts. The second discourse is the one in which self-
23 health care is increasingly important, as public front line resources dwindle. Here questions of cost,
24 relevance, robustness of information, and ease of use are important. In this paradigm, self-tracking
25 offers a sort of technological fix to austerity.

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33 Although there were many references to the mundane, even annoying rituals of data collection,
34 criticisms of *Fitbit* only appeared in a minority (2 %) of the news coverage analysed. These
35 positioned self-monitoring as a kind of labour, data generation, pollution, privacy, an area of
36 concern; and suggested that just measuring might not amount to managing health. Thus, a small
37 fraction of the coverage challenged the frames provided in the *Fitbit* and consumer electronics
38 promotional material and went further than merely trivialising the device. The most critical
39 assessment of *Fitbit* positioned the device as part of broader data industry with the following
40 headline: 'Your body isn't a temple, it's a data factory emitting digital exhaust' (Mahdawi, 2013).
41 This article drew on similar sources to the more positive review articles, namely press releases
42 from consumer electronic shows about a future of biosensors linked to data infrastructure, but
43 coupled these with reports that the French government was proposing a data tax that could be
44 applied to companies profiting from user generated data.

51 52 53 ***Fitbit* data: biopedagogy, self-tracking and datafied self**

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56 What is learnt from *Fitbit* data? Reading the data back to oneself, provides an account of how to
57 move, how much to sleep and eat. In other words the collection of fitness data is a micropractice
58 with a pedagogical dimension that concerns normalising and disciplining bodies. This biopedagogy
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4 is not simply about being 'fit' and well; it influence beliefs, behaviors and policies. It produces
5 reality, as Foucault puts it when he explains biopower; 'it produces domains of objects and rituals
6 of truth'. (1991: 194). The pedagogic aspect of governmentality in fitness data tracking concerns a
7 process of learning the behaviours and dispositions of self-care that are within acceptable modes
8 of conduct in a neoliberal health landscape. The quote 'taking care of oneself requires
9 knowing...oneself' (Foucault, 2000: 283) presupposes an educational process.

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15 Becks and Beck-Gernsheim (2001) have noted how in the age of genetics, being and staying
16 healthy is framed as desirable and expected, beyond previous limits. It is indeed a 'voluntary
17 compulsion' (144), based on the normative premise that more information will allow individuals to
18 take better decisions for their health and that of their children. As is evidenced in the analysis
19 above, *Fitbit* data contribute to the normalization of self-monitoring and self-improvement, not only
20 by establishing a firm regime of self-monitoring but also by offering new public sites where these
21 practices are being sanctioned and affirmed (social media). The types of information made
22 available to the *Fitbit* user can be thought of as encouraging an emerging self-management
23 scheme and behaviour whereby users measure their bodily activity for productivity, learn from their
24 own data and adjust their way of life accordingly.

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31 Although logging information and checking stats is a mundane and often tedious activity (see user
32 reviews, e.g. Waltz 2012), it is at the same time a form of ritual (Couldry 2003) involving positive
33 affirmation. Through this the user re-assures themselves that they are being proactive and taking
34 responsibility for their own wellbeing, in other words meeting the vision of the 'empowered patient'
35 which, as noted above, is largely communicated in the media. The free labour demanded of the
36 user who is self-tracking in order to sustain something that appears relatively simple and
37 unmediated involves multiple modes of engagement, such as reading (interpreting) and sharing
38 their own data via social networking. We can think of this as a wider symptom of the mediated
39 contexts of life today, where services such as the collection of statistical data and health
40 information are increasingly produced at home and given by users for free (see also Anderson
41 2009; Beer and Burrows 2007). While there is ambivalence as to how far the collection of big data
42 is an exploitative process (see for instance Xb 2016, Ritzer and Jurgenson 2010, Tapscott and
43 Williams 2008), or a development to be celebrated, as is the case with the QS (Nafus and
44 Sherman 2013), this phenomenon has important ethical, political and social implications.

54 **Learning self-responsibility and becoming an expert in self-care**

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57 *Fitbit* (and its fun-focused interface for the logging and accessing of personal data) seems to fit in a
58 social and political context of self-responsibility. State approaches to health in the age of austerity
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4 that link to conservative policies throughout Europe and America can be considered within a wider
5 context and historical stronghold of neoliberalism as an ideology. In the UK, where access to the
6 welfare system is universal, responsibilising the self has been a key governance strategy
7 characterising neo-liberal policy since Margaret Thatcher's administration in the 1980s. Entrenched
8 by New Labour's Third Way politics in the 1990s, it emphasised on flexible employment and life-
9 long learning (Besley and Peters, 2007). This has meant intensification of moral regulation,
10 privatization and limiting the State's role in favour of responsibilising the individual to invest in their
11 own education and welfare: both an economic and moral process (Peters, 2001). More recently, as
12 Robert de Vogli (2011) notes, neoliberal policy responses to the economic crisis by national
13 governments and the G-20, targeting the health sector specifically, have resulted in increasing
14 mortality, health and economic inequalities between and within countries.
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22 The result of such policies is a shift of emphasis from medical professionals services to self-
23 empowerment. Health moves from the visible economy of the medical industries and the state to
24 the less visible sphere of consumer labour. In the community sections of *Fitbit*, users
25 predominately discuss medical issues and link to further sources of knowledge. This mode of
26 engagement encourages users to participate and share, and to interact with other *Fitbit* users for
27 information and personal development. Instead of relying on a physician or other professionals, the
28 user is offered a mode of self-reliance coupled with support from the *Fitbit* user community. Thus,
29 the encouragement of a consumer-knowledge community operates within a larger assumption and
30 normalisation of digital connectivity and social networking. Digital health promotion and
31 biopedagogy work together, both by addressing users and consumers as learners of technology for
32 self-care, and by instructing them that such technologies and digital online practices may offer a
33 form of expertise.
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42 Expertise here refers to becoming expert in one's use of wearables and one's own capacity to care
43 for one's own well-being: becoming 'expert' in self-care with the use of wearable technologies. This
44 can be thought to actively lend to what has been termed as 'e-scaped medicine' by Sarah Nettleton
45 and Roger Burrows, (2003), a new medical cosmology whereby information and communication
46 technologies are central as means of acquiring knowledge. Nettleton and Burrows (2003) view the
47 internet as the social technology that assists with the task of reflexive management of risk, at a
48 time of waning faith in medical 'experts'. In this view, the digitisation of the welfare state and e-
49 health services is an advancement based on the assumption that more access to information is
50 better for citizens, patients and consumers.
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57 With *Fitbit*, and more generally within the new cultural context of self-tracking, the sheer volume of
58 information is specifically about one's own activity and engagement with the technology. Instead of
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4 thinking about expertise and agency in relation to the proliferation of abstract knowledge sources
5 online, here we observe the encouragement of focusing on one's own bodily production and online
6 community (linked to the commercial device) as the source of such information and expertise. The
7 QS motto 'self-knowledge through numbers' refers to such knowledge, founded on intentional
8 accumulation of statistical data, rather than general health information about conditions and
9 symptoms.
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13 14 15 **Conclusion**

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17 In this article, the framework of biopedagogy provides a way of analysing a series of micropractices
18 that mediate expertise about health, and shape data subjectivity. The pedagogic aspect of
19 governmentality in self-tracking assumes learning the behaviours and dispositions of self-care
20 which constitute acceptable modes of conduct in a neoliberal health landscape. Our discussion
21 focuses on four areas of analysis: data subjectivity and sociality; time and productivity; making
22 meaning around data; and brand identity.
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28 With *Fitbit*, data are made social. Data subjectivity is 'fun' but limited, and it requires being always
29 productive, even during sleep. Thinking about productivity in relation to temporality in particular
30 links to a broader discourse of the ideal proactive consumer of self-tracking health technologies.
31 This proactive consumer and data subject makes meaning with numbers in the context of digital
32 coaching, gamification and metaphor, as they feature in the *Fitbit* interface. Through the marketing
33 interfaces of the *Fitbit* device, including reviews and device screens, consumers are invited to
34 participate in a form of training, not only in the collection of data, and health awareness, but also in
35 the technology itself. The ideal consumer and biocitizen of the digitized welfare state is expert in
36 their own body data production, which provides a sense of agency about health.
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43 Data collection devices sell by presenting "data collection as an always already good and
44 productive practice" (Gardner and Wray, 2013: np). Trust in the objectivity of data and quantified
45 methods, or dataism as van Dijk (2014) calls it, solidifies new modes of expertise. We may
46 consequently think of a diffraction of expertise: from platforms (that set the protocols of health),
47 through to bodies (that generate data in compliance with these protocols), back through the
48 platforms (that provide the interpretation of the data); a recursive loop that opens up more markets
49 for devices that track data. The fact that *Fitbit* wearables, and other commercial tracking devices,
50 are promoted as leisure and fitness devices places them in the category of knowledge-for-
51 prevention, which is also experiential and personal. An important question that arises then is how
52 these experiential and embodied knowledges might resist the biopower of data.
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46 ⁱ This article does not provide a substantive gender analysis. However, our news coverage analysis showed that *Fitbit* is
47 targeted through health and lifestyle marketing towards young women as a lifestyle accessory. The full range of
48 devices that record and measure activity and health related data points are gendered in similar ways to the broader
49 lifestyle market. That is to say that both men and women are targeted but women are targeted more heavily, and
50 through different devices. For example, the *Fitbit One* shows a flower and the *Fitbit Flex* is smaller and more
51 colourful and signified as 'flex' – elements usually positioned on women in promotional materials. The *Fitbit*
52 *Charge* is chunkier, black or grey and signified as 'charge' and is usually positioned on men with some shots of
53 women.
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