

The human/wearable technology engagement and its embodied effects on self-trackers

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Introduction

People have for a long time engaged in activities to observe and monitor their physical functions. However, with modern technological advancements, the opportunities for what can be done have drastically increased. As these apparatuses are moving increasingly closer to our skin and flesh they make it possible to scrutinise and alter our bodies, minds and behaviours in ways that have never been imaginable before. This development has created a renewed interest in monitoring the body which has grown into a social phenomenon. In Sweden, self-tracking has been given a broad understanding by being introduced as one of several activities of biohacking; an approach of hacking one's body for self-improvement.

As people engage increasingly with wearables to alter and improve their bodies, it becomes imperative to investigate the impact of such practices and technologies on individuals' experiences.

Much of the previous self-tracking literature derives from a governmentality perspective, framing devices as a medium for surveillance and users as subjects to self-regulation. This does not acknowledge the particular agency of the technology and its effects. Although the human/technology relation is well discussed theoretically, in-depth empirical investigations of the self-tracking interrelation are rare, especially from a Swedish context. Scholars agree on that there is a need for more thorough empirical investigations of self-tracking including emotional, cognitive and bodily experiences of these practices.

Aim and research questions

The current study aims to explore and shed light on the interaction between Swedish people committedly involved in self-tracking for improvement and their consistently worn apparatuses, as well as the impact of this interaction on themselves. More specifically:

How do self-trackers and devices engage in the human/wearable technology relation and what are the embodied effects on self-trackers?



Methodology

- In-depth, semi-structured interviews with 9 Swedish self-trackers
- Thematic coding

Theory

- Material semiotics
- Theories of the lived body
- Theories of the objective body

Result of analysis

The relation between individuals and their wearable technologies is an evolving process of three interdependent, chronological stages. This reciprocal engagement is a fully embodied experience with behavioural, physical, cognitive and affective impact on individuals' understanding of themselves, their bodies and their technologies.

The Precedent stage:

Body/technology interest + triggering event
= curiosity of what self-tracking can give → decision to acquire WT

The Familiarising stage:

- Starting to build a relationship by experimenting and exploring the new WT
- WT is perceived as unfamiliar/unnatural

The engagement – effect stage:

- WT produces an Objective self which is internalised into the lived body.
- The internalisation results in a heightened Awareness. A sense of "knowing" what is going on inside of the body through instant/aggregated feedback from WT and a heightened attentiveness to physical sensations.
- Through Awareness, the body is experienced as transformable.
- WT has now become natural. To voluntarily stop wearing WT is perceived as a cognitive, emotional and physical loss – a feeling of being naked.
- However, participants use bodily engagement to negotiate the boundary between themselves and their devices.

Conclusions

The boundary between human and wearable technology is blurry. However, bodies do not simply become objectified. People use what makes them human – their intellectual, affective and physical abilities to negotiate the expansive dimensions of the objective body in the lived body and in turn their relation to technology. As *Transitional bodies*, they constantly recreate themselves and transition in-between and across these boundaries through bodily negotiation.

This work contributes to the discussion of the fading contrast between subjective and objective bodies with insights on how we, as humans, constitute ourselves in a world where human and technology are moving closer and closer together and devices are increasingly approaching our skin and beyond.

Methodology and theory

- Exploratory qualitative, abductive approach

Material semiotics and theories of **embodiment** was combined into an overall framework as these perspectives offers a focus on how people and things relate (Law, 2010) and on the physical and mental experiences of these engagements (Cranny-Francis, 2008; Csordas, 1994). As such, material semiotics is used to understand technology and humans as equally capable of producing and reciprocally being influenced by action. By contrasting the lived body as the felt, subjective experience and the objective body as a 'factual' interpretation of the physical, these diverse perspectives are combined to illuminate and problematize the subject/object boundary.

Participant overview

P	Age	Sex	Area of profession	Self-tracking technologies worn daily and consistently
P1	49	M	Automotive development	Activity watch, mobile phone: app for food intake
P2	34	M	Design and research	Activity band, smart watch, mobile phone: multiple apps
P3	27	M	IT	Smart watch, mobile phone: task management app and others
P4	41	F	Design and research	Smart watch temporarily exchanged for activity band, mobile phone: apps for sleep, menstrual cycle and others
P5	42	F	Unknown	Activity band, mobile phone: apps for sleep, menstrual cycle, and food intake
P6	39	M	Digital communication	Smart watch, NFC chip implant, mobile phone: multiple apps
P7	50	M	Digital development	Activity watch, two activity bands, smart watch, wearable ring, broche for posture improvement, pedometer, mobile phone: apps for step count, location and others
P8	33	F	Biophysics	Activity band, mobile phone: multiple apps
P9	50	F	Communication	Smart watch, RFID chip implant, mobile phone: mindfulness app

Result of analysis – illustrating quotes

The Precedent stage

When I had decided to participate [in the race] I went down [to the shop] and then I saw that they had heart rate monitors. I thought “A heart rate monitor sounds good, then one can see how high one’s pulse is when running” [...] And I have always liked technology, so that was another thing, it was a gadget to get of course. (P1)

The Familiarising stage

When you start using it it’s also like, “How well does it work?” and “how well does it match?” So then you have a phase when you test a little. [...] [You are] a little curious! “What do I get out of it?” and “what can I track, what can I *not* track?” (P2)

Yeah, so at that time it was about this with creating a relationship with [the smart watch]. [...] I had to talk like a robot to be able to do it at all: “Phone Johan!” [speaks into the watch with a robotic voice] - like that, and then it rang. (P4)

The Engagement – effect stage

Internalisation of Objective Self:

I can really see how I have spent my time. [...]. It’s extremely clear when you see it in the app. *Much* clearer, you don’t *believe* it will be as clear because you think you have an okay control [...] But you don’t, you’re only fooling yourself to that. But when you gather the data you get it... Yes, it’s a *major* difference indeed. (P3)

One thing that I have learnt is that what the brain tells you about how tired you are and what the body really endures is not at all the same thing, those are two totally different things. And the watch shows me what the body endures. [...] In the beginning, it was awfully tough to run. I probably wouldn’t have continued to run had I not been able to see [...] Now I could see that bar; 29, 30, 31 - going up, I could see when I improved. (P1)

Result of analysis – illustrating quotes

The Engagement – effect stage

Awareness:

In the same way that I have a heart rate monitor or track my brain waves – it's more that I can see what is happening inside of my body, I can see with my own eyes. It's like it's not concealed but I get to *know* – “Okay, but how is it?” sort of. [...] I guess it's more attentive. I think that's what one becomes. One becomes more *aware*. [...] Sort of, “how do I really feel?”. More, like, you look inwards. (P8)

Attentiveness to the body:

I am becoming more and more aware of that I have a body, that I'm not just a head. I'm drawn to becoming one of those head footers that children draws [laughs]. And then I want to be more active in my body. And be a *whole* human. It's *that point* I want to reach – a whole, active human. Not just a head. (P9)

The body as changeable, transitional:

It feels more and more like I sort of create myself. [...] I choose who I want to be. For a very long time I believed that one is a bit of a victim of one's own biology. That one is a victim of one's own genes. (P8)

I usually talk about my own body as a cyborg. [...] The body is no sort of holy temple in that way but a tool like anything else. And in the same way that I upgrade my phone every now and then it is fantastic to be able to upgrade one's body. [...] Thanks to that I started with technology, it has perhaps rather opened up new possibilities which I hadn't thought of previously or that used to be very sci-fi but is reality today. [...] If you would have asked me when I was 25 how I see aging I would have had a more mainstream idea. Today I'm not entirely sure I will die of age. (P6)

Result of analysis – illustrating quotes

The Engagement – effect stage

WT has become natural, something one is reluctant to voluntarily part from:

I think I would perceive it as something unfamiliar. That it was an unknown factor in my life. [...] Especially since I have been tracking so much, the small, but yet feeling of control would disappear. It's sort of like: "Oh! But now...oh! Okay. Now one is left on one's own here". It wouldn't be very pleasant. (P7)

I would feel a little naked. Like I was missing information about my body. [...] As soon as I don't have my Apple watch on me, then I feel naked, yes. It has become such a big part of my everyday life. And of me, in extension. (P6)

Negotiation:

It's just something that sits there, lights up my skin a little. [...] If I would be able to swallow a pill every morning and [...] it turns out that the pill is cheap, simple and provides thorough information – then I would give up the watch for it. Then I would get a watch that you don't need to charge every day. (P3)

P9: I didn't want anyone to tell me when to activate myself! [laughs] [...] Actually, I just want to tell it [the smart watch] to fuck off. [...] If I get to choose then everything must start from *me*.

Interviewer: Okay, so you prefer that you are the one who starts it?

P9: Yes, *but*, then I don't always do it. Because I'm a human and no robot. [...] I *know* I need to be active. But I don't do it. So I need the help. It's really important!

References

- Barfield, W., & Williams, A. (2017). Cyborgs and Enhancement Technology. *Philosophies*, 2(1), 4.
- BioNyfiken. (2017). Vad är biohacking?. Retrieved 23 April 2017, from <http://www.bionyfiken.se/vad-ar-biohacking/>
- Cartwright, L. (1995). *Screening the body: Tracing medicine's visual culture*. Minneapolis: University of Minnesota Press.
- Choe, E. K., Lee, N. B., Lee, B., Pratt, W., & Kientz, J. A. (2014). Understanding quantified-selfers' practices in collecting and exploring personal data. In *Proceedings of the 32nd annual ACM conference on Human factors in computing systems* (pp. 1143-1152). ACM.
- Clark, A. (2007). Re-inventing ourselves: The plasticity of embodiment, sensing, and mind. *Journal of Medicine and Philosophy*, 32(3), 263-282.
- Cranny-Francis, A. (2008). From extension to engagement: mapping the imaginary of wearable technology. *Visual Communication*, 7(3), 363-382.
- Crawford, K., Lingel, J., & Karppi, T. (2015). Our metrics, ourselves: A hundred years of self-tracking from the weight scale to the wrist wearable device. *European Journal of Cultural Studies*, 18(4-5), 479-496.
- Csordas, T. J. (1994). Introduction: The body as representation and being-in-the-world. In T. J. Csordas (Ed.), *Embodiment and experience: The existential ground of culture and self* (Vol. 2, pp. 1-26). Cambridge University Press.
- Duden, B. (1993). *Disembodying women: Perspectives on pregnancy and the unborn*. Cambridge: Harvard University Press.
- Dumit, J. (2004). Introduction. In J. Dumit, *Picturing Personhood: Brain scans and biomedical identity* (pp. 1-21). Princeton University Press.
- Dumit, J. (2010). A digital image of the category of the person. In B. J. Good, M. M. J. Fischer, S. S. Willen, & M.-J. DeVecchio Good, *A reader in medical anthropology: theoretical trajectories, emergent realities* (pp. 367-376). Oxford: Wiley-Blackwell.
- French, M., & Smith, G. (2013). 'Health' surveillance: new modes of monitoring bodies, populations, and polities. *Critical Public Health*, 23(4), 383-392.
- Haraway, D. (1991). A cyborg manifesto. Science, technology, and socialist-feminism in the late twentieth century. In D. Haraway, *Cyborgs, simians and women: The reinvention of nature* (pp. 149-181). New York: Routledge.
- Heidegger, M. (1996). *Being and time: a translation of Sein und Zeit*. Albany, N.Y: University of New York Press.
- Latour, B. (1996). On actor-network theory: A few clarifications. *Soziale Welt*, 47(4), 369-381.
- Law, J. (2008). On sociology and STS. *The Sociological Review*, 56(4), 623-649.
- Law, J. (2010). The materials of STS. *The Oxford Handbook of Material Culture Studies*, 173-188.
- Leder, D. (1990). *The absent body*. Chicago: University of Chicago Press.
- Li, I., Dey, A., & Forlizzi, J. (2010). A stage-based model of personal informatics systems. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 557-566). ACM.

References

- Lupton, D. (1995). The Embodied Computer/User. *Body & Society*, 1(3–4), 97–112.
- Lupton, D. (2012). M-health and health promotion: The digital cyborg and surveillance society. *Social Theory & Health*, 10(3), 229–244.
- Lupton, D. (2013a). Quantifying the body: monitoring and measuring health in the age of mHealth technologies. *Critical Public Health*, 23(4), 393–403.
- Lupton, D. (2013b). Understanding the Human Machine [Commentary]. *IEEE Technology and Society Magazine*, 32(4), 25–30.
- Lupton, D. (2014). Self-tracking cultures: towards a sociology of personal informatics (pp. 77–86). ACM Press.
- Lupton, D. (2016). *The quantified self: a sociology of self-tracking*. Cambridge, UK: Polity.
- Martin, L. H., Gutman, H., & Hutton, P. H. (Eds.). (1988). *Technologies of the self: A seminar with Michel Foucault*. The University of Massachusetts Press.
- McLuhan, M. (1994). *Understanding media. The extensions of man*. Cambridge: MIT Press.
- Merleau-Ponty, M. (2002). *Phenomenology of perception*. New York: Routledge.
- Neff, G., & Nafus, D. (2016). *Self-tracking*. Cambridge: MIT Press.
- Oxlund, B. (2012). Living by numbers. The dynamic interplay of asymptomatic conditions and low cost measurement technologies in the cases of two women in the Danish provinces. *Suomen Antropologi*, 37(3), 42–56.
- Pantzar, M., & Ruckenstein, M. (2015). The heart of everyday analytics: emotional, material and practical extensions in self-tracking market. *Consumption Markets & Culture*, 18(1), 92–109.
- Park, E. (2014). Ethical Issues in Cyborg Technology: Diversity and Inclusion. *NanoEthics*, 8(3), 303–306.
- Ribbing, M. (2017). *MattiasRibbingPodcast: Kontroversiell teknik för ökad effektivitet och nya förmågor [Podcast]*. Retrieved 5 April 2017, from https://www.youtube.com/channel/UCM7VosaoD_iMFj88AmbLApg
- Rooksby, J., Rost, M., Morrison, A., & Chalmers, M. C. (2014). Personal tracking as lived informatics (pp. 1163–1172). ACM Press.
- Ruckenstein, M. (2014). Visualized and interacted life: Personal analytics and engagements with data doubles. *Societies*, 4(1), 68–84.
- Smith, G. J. D., & Vonthehoff, B. (2017). Health by numbers? Exploring the practice and experience of datafied health. *Health Sociology Review*, 26(1), 6–21.
- Swan, M. (2012). Sensor Mania! The Internet of Things, Wearable Computing, Objective Metrics, and the Quantified Self 2.0. *Journal of Sensor and Actuator Networks*, 1(3), 217–253.
- Swan, M. (2013). The Quantified Self: Fundamental disruption in big data science and biological discovery. *Big Data*, 1(2), 85–99.
- Vetenskapsrådet. (2002). *Forskningsetiska principer inom humanistisk-samhällsvetenskaplig forskning*. Stockholm: Vetenskapsrådet.
- Waldby, C. (2000). *The visible human project: Informatic bodies and posthuman medicine*. London: Routledge.
- Wolf, G. (2010). *Gary Wolf: The quantified self [Electronic resource]*. TED. Retrieved 5 April 2017, from <http://www.ted.com/talks/view/id/966>
- Wolf, G. (2016). The Quantified Self: Reverse engineering. In D. Nafus (Ed.), *Quantified: Biosensing technologies in everyday life* (pp. 67–72). Cambridge: MIT Press.