

Making Sense of Self-Measurement Psychology and ethics of personal health metrics

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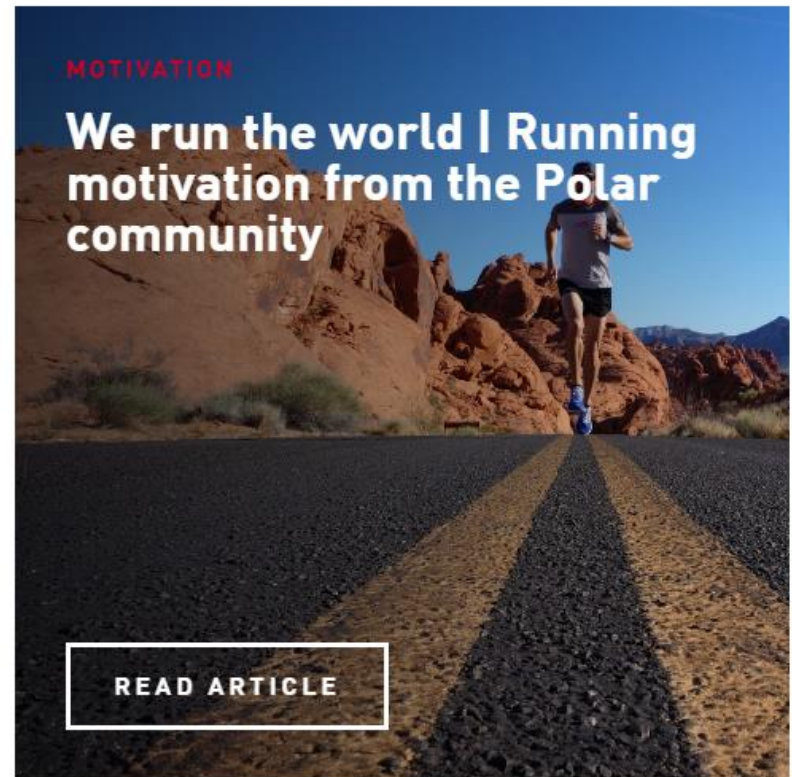
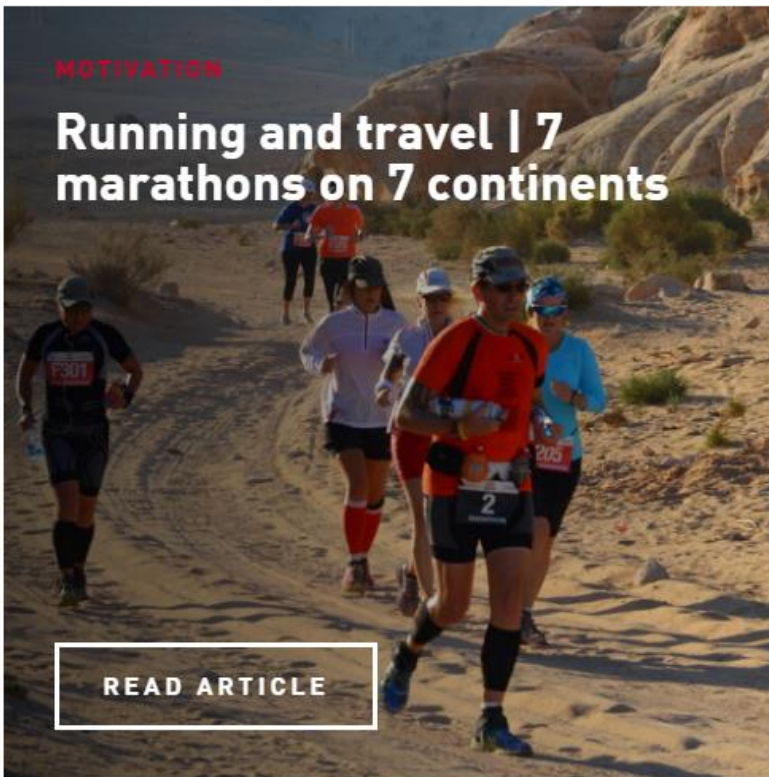


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My health goals? My community?

When did walking 10,000 steps a day become a life goal?

What assumptions are implicitly made about a normative 'healthy body' and a healthy workout regime?

Why are trackers geared towards constant quantitative improvement, irrespective of context, quality, my bodily quirks, my mental state?

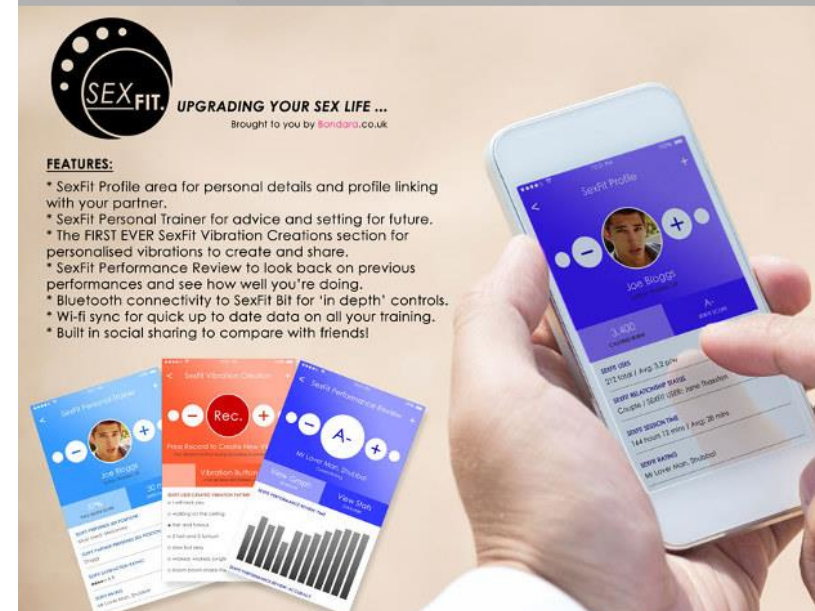
Why does all this seem so depressingly reductive?



A reductive comparison: Quantified sex



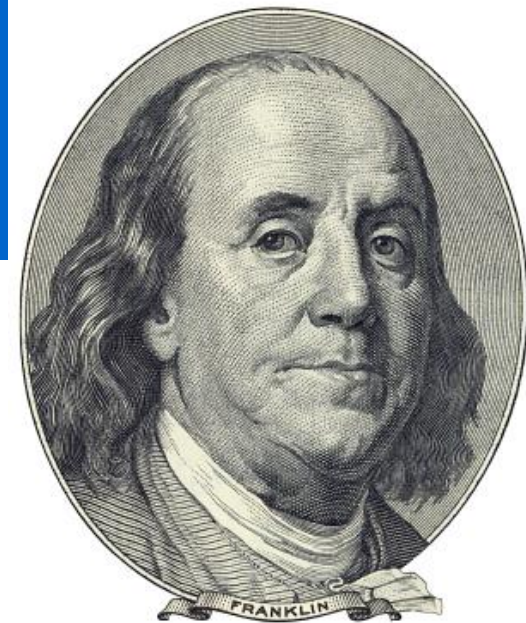
- Apps such as iThrust, Sex Stamina Tester, Sex Counter Tease, and iCon equate quality of sex on things like the **amount of thrusting** that goes on and how **loud** the partner is.



Self-quantification isn't new

- Benjamin Franklin kept accounts of how he spent his time and whether he lived up to the 13 virtues he set for himself.

“I made a little book, in which I allotted a page for each of the virtues. I rul'd each page with red ink, so as to have seven columns, one for each day of the week, marking each column with a letter for the day. I cross'd these columns with thirteen red lines, marking the beginning of each line with the first letter of one of the virtues, on which line, and in its proper column, I might mark, by a little black spot, every fault I found upon examination to have been committed respecting that virtue upon that day.”



FORM OF THE PAGES.

TEMPERANCE.

Eat not to dulness: drink not to elevation.

	Sun.	M.	T.	W.	Th.	F.	S.
Tem.							
Sil.	*	*		*		*	
Ord.	*	*	*		*	*	*
Res.		*				*	
Fru.		*				*	
Ind.			*				
Sinc.							
Jus.							
Mod.							
Clea.							
Tran.							
Chas.							
Hum.							

Self-quantification isn't new

- Doctors' scales first produced in 1865.
- Public "penny scales" in 1885.
- Household scale in mid 20th C.



Self-quantification isn't new

- 1960s: The “manpo-kei” or “manpo-meter”
- The first device to:
 - count steps rather than distance
 - be marketed on health grounds
- Origin of 10,000 steps

一日一万歩あるきましょう

万歩メーター

MANPO-METER

◎ 日本万歩クラブ推薦

東京オリンピック以来高まった国民の体力づくり、そのあらわれが「一日一万歩運動」です。きょう何歩あるいたかしら？小さく軽く美しいデザインの「万歩メーター」は、日本万歩クラブ推薦の歩数計です。白・黒・ベージュ・赤の4色がありますから、お好きな色をお選び下さい。(全国有名デパートで販売中)

¥2,200

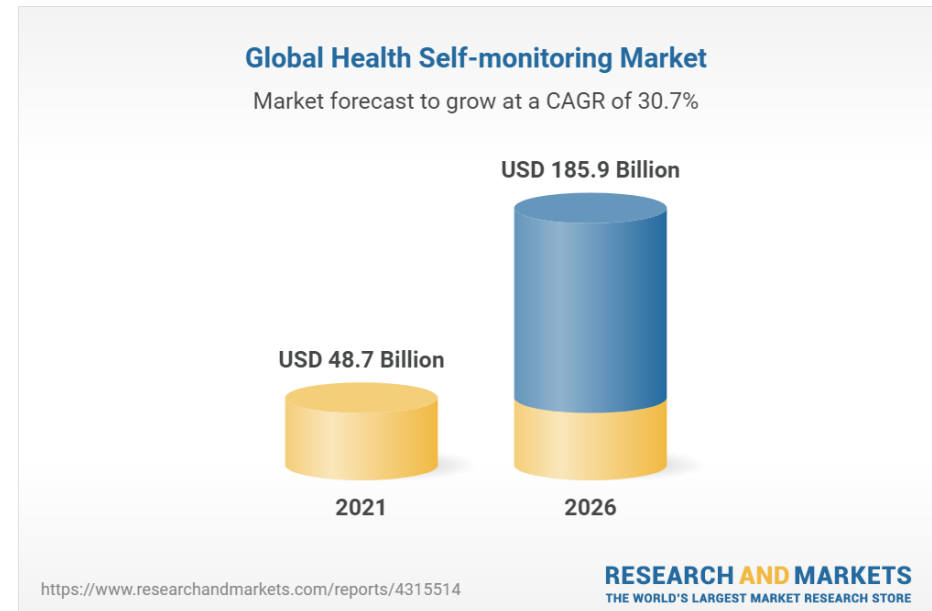
製造元
ヤマサ時計計器株式会社

Proliferation in wearables and apps



A growing tech market...

- Wristbands, smartwatches, and other peripherals (e.g., FitBit)
- Mobile self-monitoring software applications.
- Smartphones and other mobile "hub" devices that analyze, display, and store self-monitoring data collected by peripherals as well as their own onboard sensors.
- Self-monitoring software platforms such as Apple HealthKit, Google Fit and others.





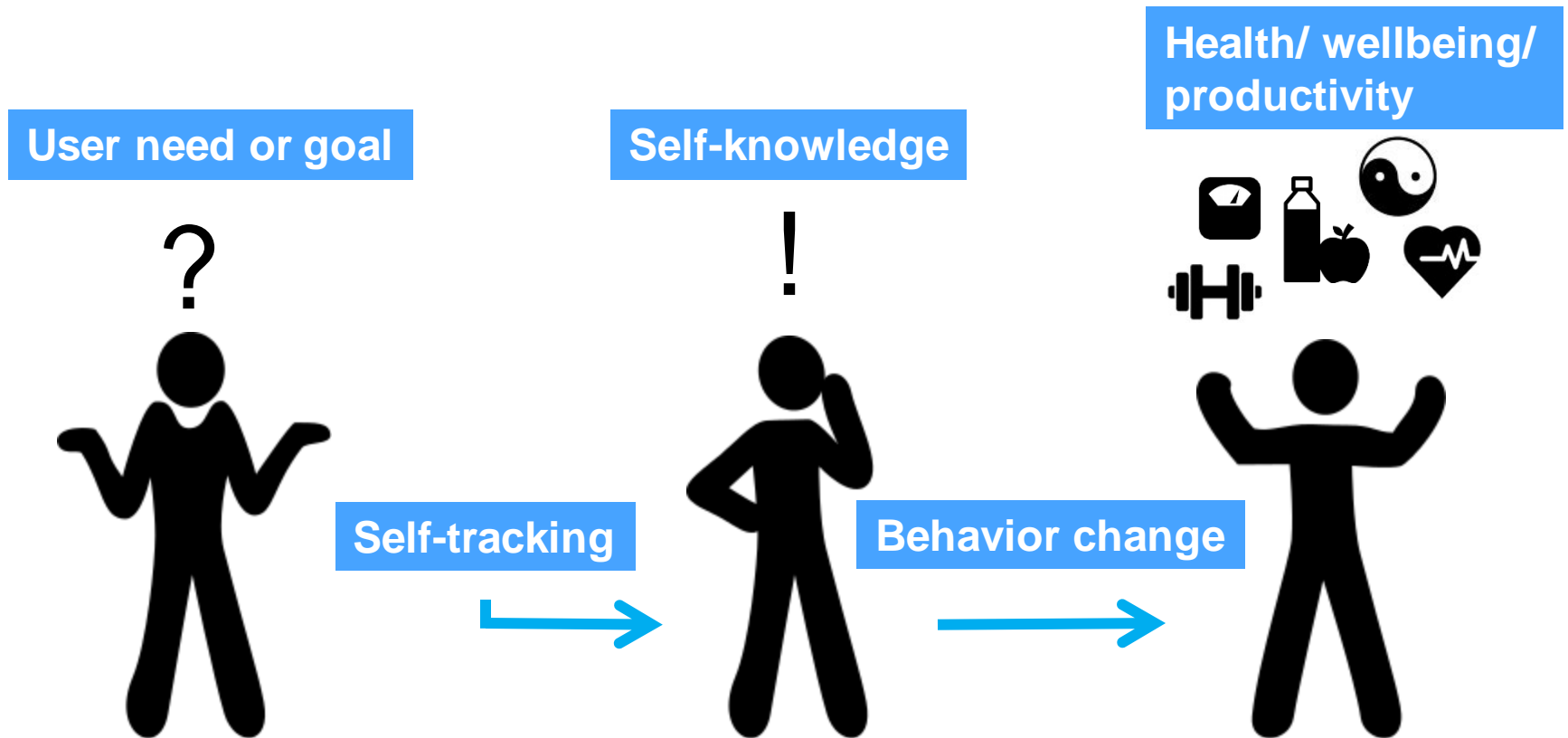
QUANTIFIED SELF

SELF KNOWLEDGE THROUGH NUMBERS

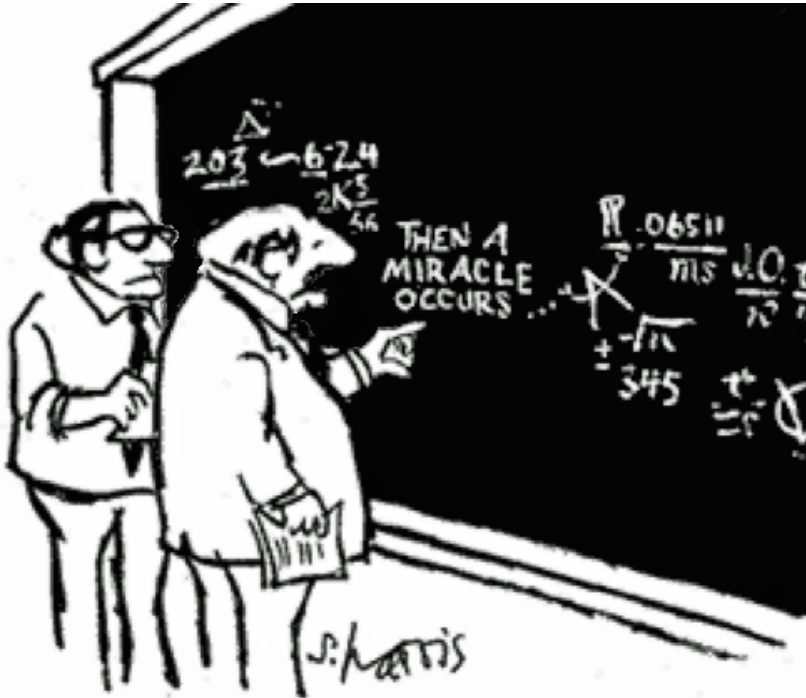
Chris Anderson, former Editor of Wired

*“This is a world where massive amounts of data and applied mathematics replace every other tool that might be brought to bear. Out with every theory of human behavior, from linguistics to sociology. Forget taxonomy, ontology, and psychology. Who knows why people do what they do? The point is they do it, and we can track and measure it with unprecedented fidelity. With enough data, **the numbers speak for themselves.**”*

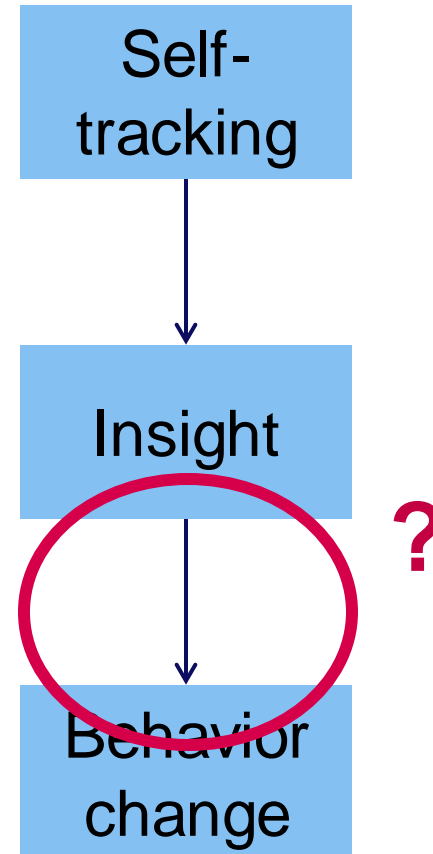
“Self Knowledge Through Numbers”



The promise of QS



"I THINK YOU SHOULD BE MORE EXPLICIT HERE IN STEP TWO."



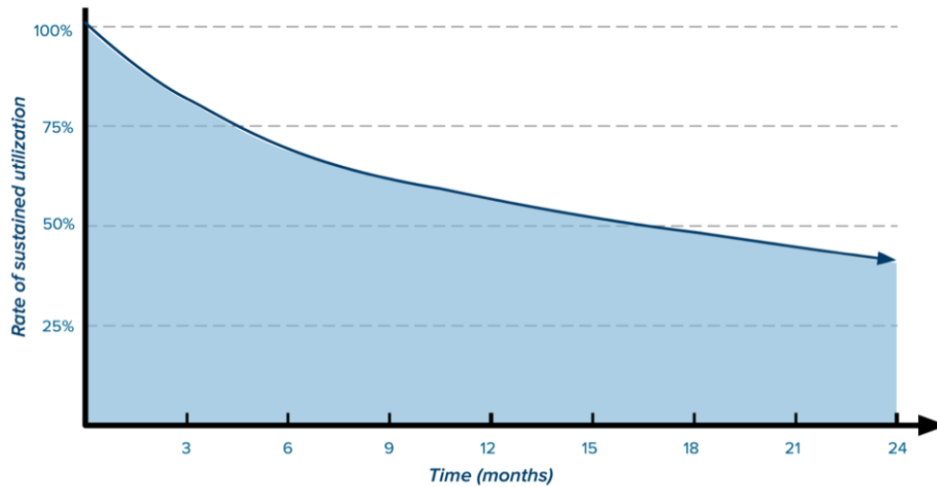
What does research suggest?

Lack of efficacy

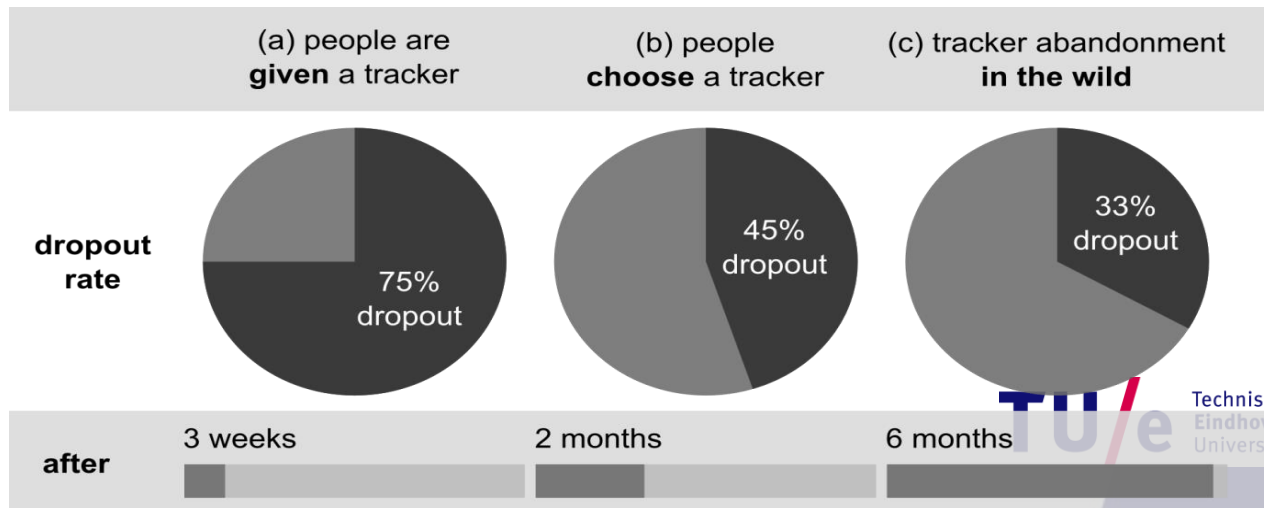
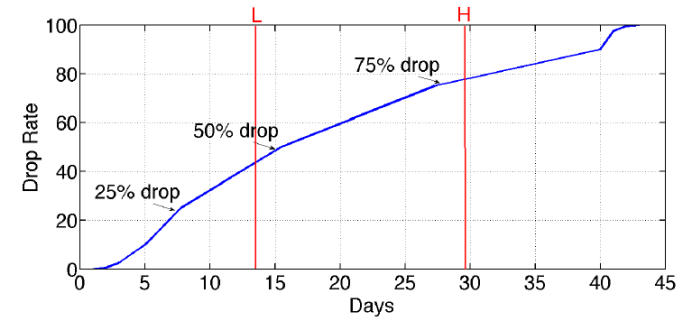
- Lack of evidence that fitness technology can promote behaviour change (Sullivan & Lachman, 2017) or enable users to make measureable health improvements (e.g., weight loss; see Jakicic et al., 2016).



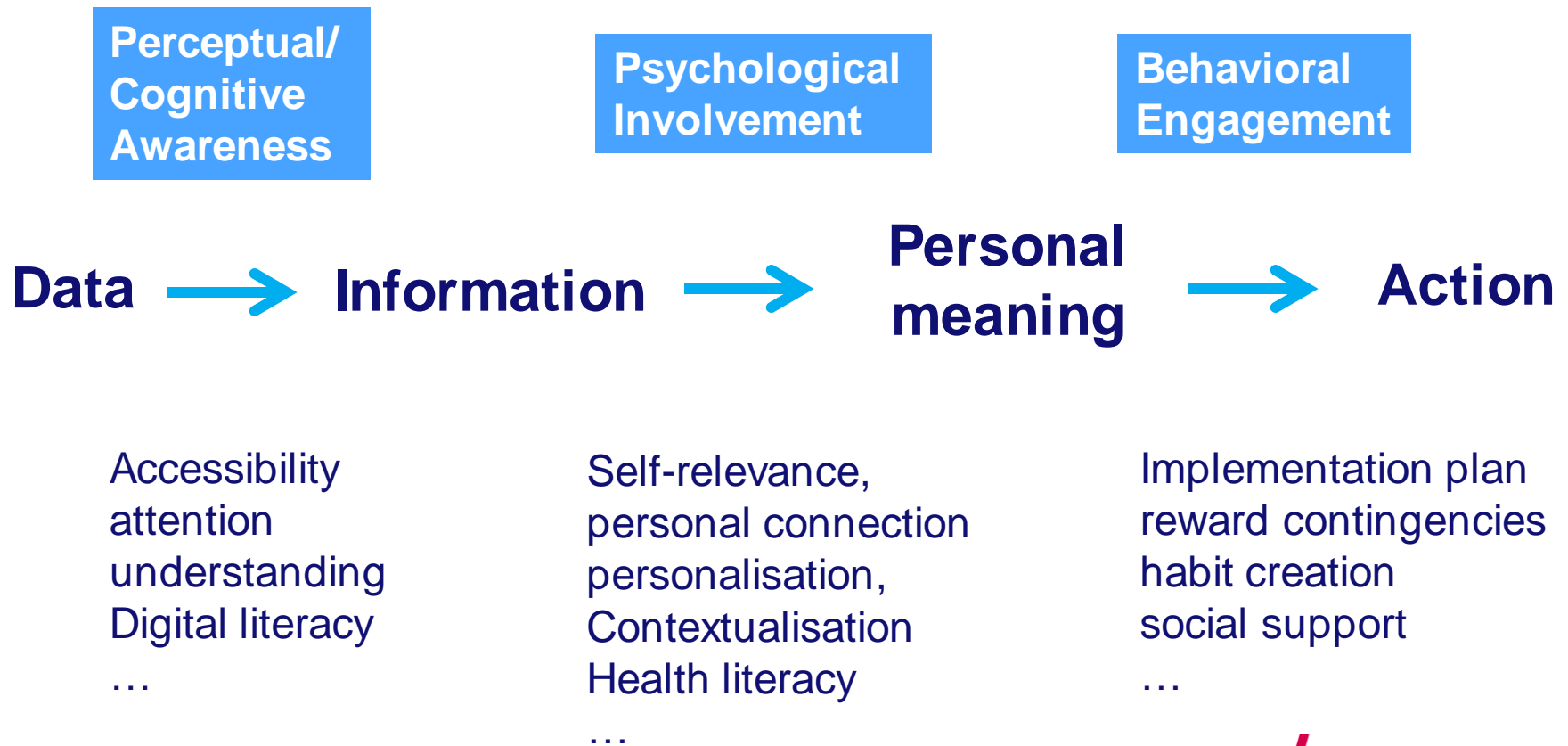
Many wearables fail to engage long-term...



Declining Rate of Sustained Activity Tracker Use Over Ownership
(Endeavour Partners, September 2013)



From data to action: psychological gaps



What does research suggest?

Some negative side-effects

- Self-tracking prevent exercisers from becoming truly immersed in their environment (Little, 2017; Hanci et al., 2019)
- Tracker use can trigger a number of negative emotions (Goodyear, Kerner, & Quennerstedt, 2017; Kersten - van Dijk, E., et al, 2015).
 - Rumination
 - Self-objectification, self-surveillance
 - Feelings of inadequacy

“I increasingly started to feel anxious and stressed when opening up my habit tracker. It was no longer a measure of my successes, it was a reminder that I wasn’t doing enough, or doing it right. I started to want to make everything a checkable habit. Sometimes I’d wake up in the morning, turn my phone on and open the habit tracker wanting to check a box just to feel like I’d accomplished something.” – Olga Alexandru

What does research suggest?

Some negative side-effects

- (Over)commitment to self-tracking
- Means vs. Ends
- Biomedicalization of health experiences

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ORIGINAL ARTICLE



Measuring commitment to self-tracking: development of the C2ST scale

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Abstract

Self-tracking technologies bring a new set of experiences into our lives. Through sensors and ubiquitous measurements of bodily performance, a new form of automation experience shapes our understanding of our body and our behavior. While for many individuals self-tracking has an important role in their daily lives, a theoretical understanding of the level and behavioral manifestations of commitment to self-tracking is still missing. This paper introduces the concept of *commitment to self-tracking* and presents the development and first validation of a new 12-item behavior-based scale for its measurement, the *Commitment to Self-Tracking (C2ST)* scale. Using online survey data from individuals wearing self-tracking technology ($N = 300$), we explore the underlying factor structure of the scale and determine its reliability and validity. An analysis of the survey data indicates that commitment to self-tracking positively correlates with autonomous motivation for tracking and negatively correlates with controlled motivation. The C2ST scale brings insights on how self-tracking technology, as a novel automation experience, is affecting users' everyday behaviors. Overall, by emphasizing the feasibility of defining commitment behaviorally, the paper concludes with implications for theory and practice and suggests directions for future research.

Keywords Self-tracking · Commitment · Quantified self · Measurement · Scale development

Unintended effects of self-tracking

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Abstract

Although self-tracking is generally thought of as a self-improvement tool, it may also affect its users and the social context in which it is employed in unexpected ways. Here we make a first attempt at an inventory of known and theorized unintended effects of self-tracking. Although this inventory is mostly based on theory, personal experience and anecdotal evidence, the impact some of these unintended effects might have highlights the need for empirical investigation of these matters.

Author Keywords

Personal Informatics, Quantified Self, Evaluation

ACM Classification Keywords

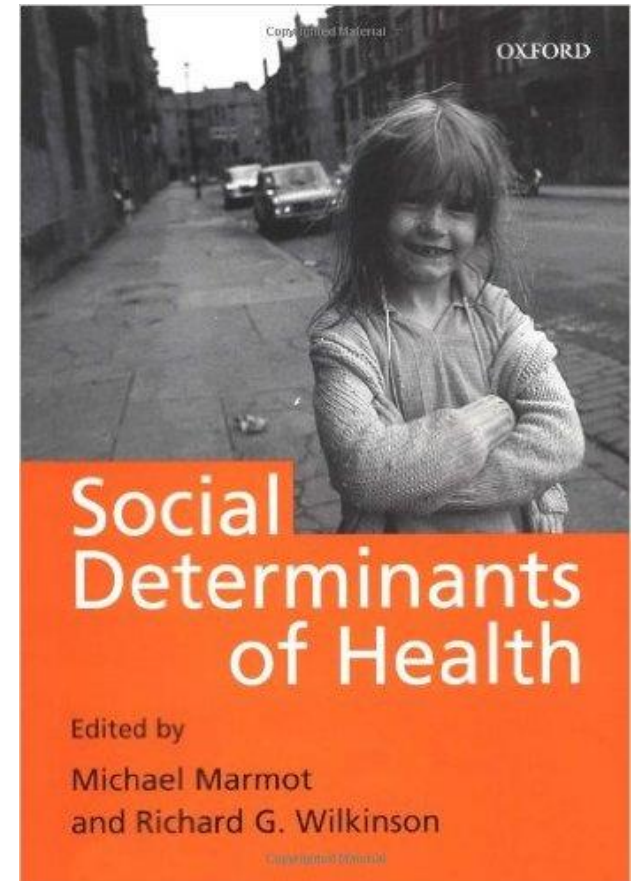
H.5.m Information interfaces and presentation (e.g.,

Challenging assumptions: Numbers do not “speak for themselves”

- Numbers are not neutral: They imply order, significance, and comparative performance. They imply judgement, by ourselves and others. They imply self-objectification
 - what is deemed as “normal” vs. deviant for example is implicit in the mere fact that we use numbers, and the way in which numbers are presented, gauged, and compared. There appears to be very little room for personalization; users are nudged to think in terms of “what is normal in some absolute sense” rather than “what is normal for me”
- Risk of **data fundamentalism**: The notion that correlation always indicates causation, and that massive data sets and predictive analytics always reflect objective truth; an indisputable “fact” about a person

Challenging assumptions: Risks of data fundamentalism

- Decision-making based on this data may shift regulatory focus from addressing the 'causes' of certain socio-health problems to addressing their 'consequences' or 'effects'.
- May not address the pre-existing social injustices and inequalities - **Social Determinants of Health** - that cause some of the health and fitness 'problems' that Quantified Self techniques aim to solve



Challenging assumptions: You are not a number...

Key aspects of the **phenomenology of health** cannot be expressed in numbers

“Bodily intuition is being outsourced to, if not displaced by, the medium of ‘unbodied’ data”. It is this objectivated facility that is increasingly used to orientate behavioural decisions as they relate to bodily maintenance.”

(Smith, G. J., & Vonthehoff, B., 2017)

“Surveillance and self-surveillance practices, however, were clearly connected to health equating to fitness and being ‘fit’ or not being ‘fat’. These narrow interpretations of health, equally, underpinned resistance.

Goodyear, Kerner, & Quennerstedt, 2017)



Challenging assumptions: You are not a number...

“Grown-ups like numbers. When you tell them about a new friend, they never ask questions about what really matters. They never ask: ‘What does his voice sound like?’ ‘What games does he like best?’ ‘Does he collect butterflies?’ They ask: ‘How old is he?’ ‘How many brothers does he have?’ ‘How much does he weigh?’ ‘How much money does he have?’ Only then do they think they know him.”

**Antonie de Saint-Exupery,
*The Little Prince***



Refocusing our efforts

- From health-by-numbers, to a more holistic notion of health and wellbeing (embodied, contextualized, affective, historic, cultural, etc)
- From self to social, from data to stories
- From performance to mastery, from attempted perfection to a willingness to learn (and fail)

ORIGINAL RESEARCH
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The Impact of Mindset on Self-Tracking Experience

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Self-tracking technologies aim to offer a better understanding of ourselves through data, create self-awareness, and facilitate healthy behavior change. Despite such promising objectives, very little is known about whether the implicit beliefs users may have

Interaction Design and Architecture(s) Journal - IxD&A, N.29, 2016, pp. 121-135

Design Beyond the Numbers: Sharing, Comparing, Storytelling and the Need for a Quantified Us.

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Abstract. In this article we discuss the social side of self-tracking.

Design considerations for positive, mindful engagement with health tracking devices

- Design for **learning**
 - **Stimulate self-curiosity and self-learning** while avoiding self-evaluation, self-judgement, or healthism
 - **Use relevant concepts from education and didactics**: didactically appropriate explanations, relevant comparisons (e.g., Zone of Proximal Development)
 - Design for **insight**; use intuitive, understandable and meaningful concepts, metaphors and visualisations; allow interactive probing
 - **Design for failures and setbacks**: Everybody fails and it is ok to fail; struggles, pain, frustration, stress, disappointment, guilt – they are part and parcel of understanding and exerting oneself; failure is a great way to learn

Design considerations for positive, mindful engagement with health tracking devices

- Design for **sociality**: support annotation, storytelling, sharing and social support mechanisms
- Design for a **diversity** of users, with a diversity of bodies, a diversity of meaningful goals, a diversity of resources and capabilities
 - Contextualize, personalize
 - No “trickle-down” professional sports gear as default design
 - Realise that **the dynamics of progress may be very different for different people** with different bodies. For many, avoiding illness and decline is progress
- Design for **different modes and manners of use**: non-committed use, intermittent use, alternate use, non-use; eyes off screen
- Design for **ambiguity**: Be transparent about **inaccuracies** of tracking, and the limitations of numbers; create realistic expectations; ambiguity is a feature, not a bug

Acknowledgements



Elcin Hanci

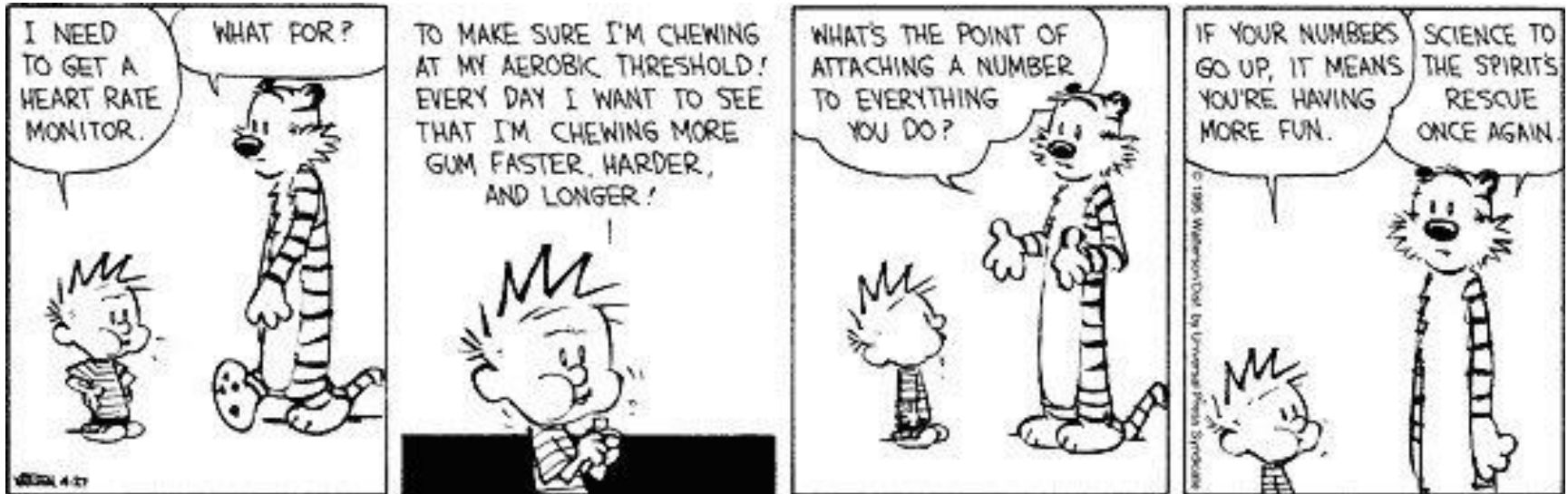


Heleen Rutjes



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Thank you for your attention! 😊



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