"What's The Point of Exercising If It Cannot Be Measured?" A Post-Phenomenological Analysis of Self-Tracking Devices

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Abstract: This study investigates the effects of information supplied by self-tracking technologies on the human-technology relationship through a post-phenomenological approach. Self-tracking technologies, which have become increasingly popular among users since 2000, nowadays, provide biodata to individuals in many different areas from daily step count to heart rhythm or from sleep quality to symptom tracking. The first part of the paper revisits post-phenomenological approach that is a relatively new approach analyzing the human-technology relation. The empirical focus of the study is grounded on the motivation for applying self-tracking gadgets, perceptions of gathered data, potential changes in the conception of the self-knowledge through mediated data and its possible consequences. For the empirical research an open-text survey is conducted with 26 people who were users of a self-tracking device. The findings suggest that self-tracking activity through wearable technology affects the perception of self-knowledge and preliminary results also indicate a dependency to measured data more than it is needed. The results contribute to a more nuanced understanding of adoption of the emerging wearable technology in daily life.

Keywords: self-tracking, post-phenomenology, activity tracker, self-knowledge

INTRODUCTION

In the 21st century, humans have surrounded by wireless network technologies and digital mobile devices almost in every area of their lives. As computers became cheaper and more accessible to almost everyone, the areas they are used have diversified and, along the way the user interaction with computers has also transformed (Harper et al. 2008, 31). In addition to their capacity of continuous connectivity and variation of their usage area, computers have become more significant and useful to us as the access to data and information becomes more

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manageable and profitable (Sultan 2015). Amongst many technology products the present paper focuses on wearable technologies, the most popular of personal information systems. Unlike most other technology products that provide people with information about their environment, personal information systems help people to better understand their own behavior, as well as enabling users to engage in both the collection of behavioral information and the interpretation of that information (Li, Dey and Forlizzi 2010). Today the technological advances in personal information systems herald the coming of a new threshold in the digital domain, which will transform the use of digital devices from just carrying them to wearing them (Sultan 2015). The wearable technology can enable people to collect and analyze personal biodata by providing feedback and guiding the user for the targeted behavior. Here the term wearable refers to the use of human body as a support medium for the product, with the exception of hand holding (Gemperle et al. 1998; Siewiorek, Smailagic, Starner 2008). Wearable technologies can generally be described as man-made products which relate to the exchange of information with the human user over his/her body with the help of a number of sensors and microchip technologies. For identifying a technology as wearable, it must be used on a specific routine (James and Petrone 2016, 38), worn in certain periods every day or taken out of bed every night. The term wearable technology refers to a broad category that includes wearable technologies, activity tracking devices, smart glasses, smart watches and garments with embedded sensors, tattoos, and implants.

The wearable technologies are the latest products of the phenomenon known as self-tracking, which is also referred to as life-logging, the quantified-self, personal analytics, self-quantification and personal informatics. Self-tracking has emerged around the year 2000, in the convergence of the internet and gadgets of smart phone technologies. Even if people have been keeping analog records of their lives since primitive times (Carmichael 2010), the deed of self-tracking through the contemporary technological devices has already gone beyond imagination. Self-tracking is an activity in which people use digital devices willingly and autonomously to track and record certain aspects of their lives (Lupton 2014b). With self-tracking devices, one can track a wide range of data relating to one's bodily functions and everyday habits from steps walked, heart rate, body fat to pain levels. Most of the users who perform personal tracking activity monitor physical activity (exercise, step count, etc.), body characteristics

(weight, heart rhythm, etc.), well-being (sleep cycles and quality, stress management, etc.), nutrition and medical health (Appelboom et al. 2014; Gimpel et al. 2013; Rooksby et al. 2014; Swan 2009). Self-tracking is also popular for symptom tracking (zone or frequency of illness), treatment tracking or following biodata in order to prevent illness. Another significant use of wearable technologies in health is no doubt elderly care by tracking location or preventing fall.

As the popularity of the self-tracking rises by the 2000s (Akyaman and Ayas Onol 2018), diverse models of tracking technologies are designed. These technologies include smartphones, tablet computers via apps; in wearable forms as smart watches, smart bands, clip-on devices, earbuds, jewelry, textiles. When we take into account the devices that are already sold or still in concept phase, it is seen that the most specialized ones are fitness and lifestyle related products. Fitness devices are defined as sports-related or non-medical devices that provide health-related benefits. As to the devices considered in the lifestyle category, other than sports, they register physiological and psychophysiological characteristics of the user (http-1 2015). Usually there is no clear distinction between these two categories of devices and most of the time a device can accommodate features of different categories at the same time. In addition to being wearable and portable, they are designed to be positioned in different parts of the person's body and to allow for different forms of interaction.

THE USER-TECHNOLOGY RELATION

A new technology no doubt suggests a new form of interaction between the user and the mentioned device and this interaction most likely affects our behavior. Today with the transformation of the type of information provided by technology, the relationship between humans and computers has changed significantly and become more intimate than it is before with a laptop computer (Harper et al. 2008). In the case of wearable technologies, intimacy issue gains more importance. A technology that is so intertwined with our daily lives through our bodies is most likely to have some impact on society as well as on its individual users. At this point, it is crucial to note that the communication and thus the interaction between technology and the user is affected deeply by the design phenomenon. Nowadays, it can be said that there is almost no limit to the size of the device or to the infrastructure of communication or even the access to the production of technology, but it is necessary to mention people as the limiting

factor in the case of wearable devices. Since a person is now free to do what s/he wants with technology, Sullivan (2016) mentions that from this point onwards, it is necessary to specify what is desired and to understand and define how the process will proceed. We should decide how we want to live with technology as a society through the questions of what is healthy, what really improves our lives, and that is surely the most important part of human-centered design (Sullivan 2016, 2).

Similarly, Kuang (2013) states that without the right behavioral design or without considering how new products and services adapt to people's lives, a new technology can have negative effects on human life. In this sense the interface boundaries between the user and the new technologies deserves more attention since it is becoming more and more important to understand the effect of the diminution and convergence of the boundaries in this relationship in which the personal experience at hand addresses the very question of "what defines an individual, and whether embedded devices are part of that definition (Harper et al. 2008, 37).

WEARABLE TECHNOLOGIES AND CONSUMER CULTURE

In addition to the user-technology boundary issues, when the dynamics of consumer culture and the rise of social media converge, these wearable technologies with the data provided for the sake of health concerns has slowly become a part of user's social identity. The terms that are used in human machine interaction literature such as personal informatics, personal analytics and quantified self and all refer to personal tracking action, which is defined as monitoring, measuring and recording meaningful data of a person's body and behavior in order to optimize one's life (Lupton 2014a). Yet, among these a number of wearable technology concepts are designed to support the phenomenon of personal tracking with quantitative-self trend, especially in Europe and the USA. For instance, online platforms such as Quantified Self (QS), supports and enables the data-driven and user-centric technologies. The involvement of social media encouraged people to share their daily habits as well as their biodata on such platforms. Both wearable technologies and online platforms are surely in their infant phase since for instance the well-known QS movement has launched only in 2007 and so far reached 34 countries all over the world. Not surprisingly, to this time they are mostly a concern of Western culture thus, carry multiple or rather endless possibilities in their relation to the non-western cultures. Yet, as early as 2018 an

epistemological and ontological shift is observable in the human-technology-world relation due to the use of this wearable technologies and the form of sharing the data provided. Now, human body is treated as a "project" of self-tracking phenomenon (Ajana 2017, 2). Kristensen and Ruckenstein (2018, 3624) even state that "Quantified self-inspired self-tracking" sets up "a laboratory of the self". Although Quantified Self movement is outside the scope of the present study, the term "a laboratory of the self" is relevant to a post-phenomenological understanding of the whole self-tracking experience.

THEORETICAL FRAMEWORK: POST-PHENOMENOLOGICAL APPROACH

The possible alterations of human-technology relation with respect to self-tracking technologies can be analyzed through a post-phenomenological approach. Post-phenomenology is defined by Don Ihde (2015, vii), one of the prominent thinkers of the subject, as "a philosophical style of analysis" concerned mainly with science and technologies. Ihde is known to be the first American thinker on philosophy of technology and he wrote plenty on the subject such as technology and the human body (see Ihde 1990; Ihde 2002) as well as postphenomenology and technoscience (Ihde 2009). In his recent words, post-phenomenology focused on how humans "bodily-perceptually engaging a world through instruments" (Ihde 2015, xii) and it focuses on the answers of questions like: "How do technological instruments affect our experience of the world?" or "Do technologies offer new forms of knowledge whether scientific or other kinds?" However, Rosenberger and Verbeek (2015, 12) warns the technology reader that this field does not seek for the "absolute foundations of reality or knowledge".

This kind of approach favors micro-scale analyses of adaptation of self-tracking technologies by users. Self-tracking devices provide both biological and biographical data simultaneously and this feature has gained a whole different level with individuals sharing their bio data online on such platforms like Facebook and Twitter. Sharing biodata via internet has triggered discussions on possible biopolitical aspects of self-tracking. There is already a growing literature on the subject. Some enthusiastically celebrate self-tracking phenomenon (Swan 2012; Hemment and Townsend 2013; Wei 2013). Some scholars indicate the possible risks of self-tracking devices and the data provided by these devices such as privacy and surveillance (Ajana

2017; Lupton 2012; Lupton 2016; Moore and Robinson 2015) or governance of the self in neoliberal societies (Foucault 1993; Lorey 2012). A third approach acknowledges the risks and tries to surpass them by giving self-tracking the benefit of the doubt (Van Den Eede 2015; Ruckenstein 2014).

The present study benefits from post-phenomenological approach in order to discuss the effects of the use of physical activity trackers on the hermeneutic interpretation of the human-technology relation. The most interesting part of self-tracking phenomenon is the user is all at once the source as s/he delivers the "material to be measured"; the interpreter of the bio data; and also the actor who acts on the interpreted data. Kristensen and Prigge (2018, 44) rightly puts that this is an "intertwining of the subject, data and technology that calls for closer examination". Besides the contemporary discussion on the empowerment vs surveillance potential of self-tracking phenomenon, the data supplied by self-tracking technologies has the potential to alter the classical ways of knowing oneself. Such an inquiry deserves -in Rosenberg and Verbeek's words- a philosophical attention. By self-tracking technologies the individual is equipped with such amounts of clusters of self-biometric data that s/he "knows" himself or herself only through numbers that promise most accurate and up to date biodata. This is no doubt addresses that the notion of self-knowledge might gain a whole new meaning in the near future. This present study will focus on this possible outcome of self-tracking technologies since we believe that in the future of self-tracking technologies, the hermeneutics of the numerical data provided by these technologies will be discussed widely. The basic motivation of self-tracking habit that is accessing most current biodata about ourselves already have influence on how we *know* ourselves. Moreover, the present study tries to draw attention to the emerging habit of not exercising without the self-tracking gadget among users which might turn into a discouragement rather than encouragement for a better health. This may actually be one good example for Rosenberg and Verbeek's question "how will self-tracking systems affect our view of what worthwhile knowledge precisely implies?" The study shows that even as early as now, the technologically mediated data gains such an importance that the users of self-tracking technologies whose main motivation is generally detected as reaching a better health, abandons daily exercise if due to any reason they do not carry their devices with themselves.

As for the two specific reasons for taking a post-phenomenological stand for the present study, first of all, post-phenomenological analysis indicates an empirical turn in philosophy of technology which enables us to exemplify human-technology relations in case studies (Kroes and Meijers 2000; Achterhuis 2001). Secondly, the present study focuses on the effects of using self-tracking technologies on our relation to knowledge and we share Yoni Van Den Eede's insights as he rightly puts that the conceptual toolbox of post-phenomenology fits well with self-tracking phenomenon since it entails "the enmeshment of bodies, technology, and perceptual experience" and this very well corresponds to the notion of embodiment relations of post-phenomenology. Moreover, against the potential limitations of classical approach on such a new and dynamic field of self-tracking phenomenon, it is the post-phenomenological approach that presents an alternative *method* which does not ignore the multiple possible outcomes of the phenomenon in question.

METHOD

The present study conducted an open-text survey with 26 (17 E/ 9 K) participants. All the participants were recruited via online social platforms and online tech forums and they were selected amongst people who have used or currently using a wearable personal fitness tracker for at least three months. All participants answered an online survey consists of 17 questions. These questions target to determine the motivations, expectations, usage routine, levels of utility and dependency to the biodata provided by the device and lastly as specific to this study, the possible behavioral change in case of the lack of the tracking device (e.g. forgetting or quitting). In the end, we discuss how the targeted behavior is affected in the absence of the device via forgetting or quitting. As for the subjects of the survey the outline includes the above titles:

1- Motivations for Using a Self-tracking Device

2-Expected and Accomplished Behavioral Change through Assessment

3-Benefits of the Data Provided by the Device

4-Level of Dependency of Data Provided by the Device

At the beginning of the survey, the participants answered questions about demographics information. Following this, participants answered a set of open-text survey questions in the frame of topics listed above.

The responses regarding usage patterns, data assessment and the effects on expected behavior change and data/technology dependency were assessed with an open coding approach through an iterative process.

According to the demographic information of the participants, %30 of the participants are between 18-29 years old; %45 of the participants are between 30-39 years old and %25 of the participants are over 40 years old. Amongst the study participants, 15.4% are high school graduates, 19.2% have a two-year degree, 46.2% have an undergraduate degree and 19.2% have postgraduate degrees. %65,4 of the participants decide to purchase a tracker due to online advertisements and buy the product after researching the features of the device. %11,4 of the participants decide to purchase the product due to family or friend advice. As for the duration of usage, %69,2 of the participants reported using a fitness tracker smartwatch for more than 12 months. The rest of the participants reported using a tracker for minimum 3 months. Specifically, all participants use a smart watch or a wristband and except three people, all participants also use their cell phones in order to track their physical activity. %53,8 of the participants never takes off the device; %23,1 takes off the device before bed.

RESULTS AND DISCUSSION

In this section, first, we report the participants' motivations for using a self-tracking device. Next, we present the participants' assessment style of biodata provided by the device. Lastly, we report expected behavioral change regarding the conception of the biodata provided by the device and the level of dependency on the device and the metric data. As for the main subjects of the survey, the findings are as follows:

1-Motivations for Using a Self-tracking Device

At the beginning of the study, the participants were asked about the features of their activity tracking devices as well as the frequency and level of participant's usage of these features. In the light of these questions, it is examined whether there is a consistency between the features of the device and the main motivations of the users to buy the device. When the data were analyzed, we see that 76.9% of the participants stated that their primary motivation to buy the device was to encourage physical activity in terms of achieved daily step.

Secondary motivation to purchase the device is reported by %73,1 to be doing sports more. The other reasons to prefer buying an activity tracker and the features of the device that are frequently used are respectively monitoring sleep pattern (%42,3); monitoring heart rate (%34,6); preventing the risk of diabetes / cardiovascular disease (%15,4) and lastly curiosity by %7,6. When all the answers were examined, it was observed that there was a consistency between participants' basic motivation and the features that are the main reasons for purchasing the devices.

2- Expected and Accomplished Behavioral Change through Assessment

When the results of the questions targeted *expected and accomplished behavioral change through assessment* were examined, it was observed primarily that there was a precise encouraging effect on the user of activity monitoring devices. In addition, there was also a positive effect that contributes to the initial motivation of the user and allows him or her to maintain a similar pace to the initial motivation level (Example: p.3, p.5, p.6, p.7). Five (5) out of the 8 people who self-tracked themselves daily, stated that they tend to change the behavior that they find insufficient or incomplete. It is seen that participants who do not follow their daily record regularly or who make statements like "not much to follow" (p.2) or "not much" (p.10) do not tend to change any behavior.

Some of the examples of the answers given by the interviewees under this heading to the relevant questions are as follows:

p.4: When I am behind my daily targeted number of steps, I make some extra effort and walk to ensure that my monthly average of the step count is not adversely affected.

p.5: I try to be more active.

p.8: I can measure how tired my body is by means of the change in my resting pulse and I decide whether to make a long walk the next day accordingly.

p.15: I noticed that I was walking too fast during the walk and went over the fat burner heart rate to cardio level, so I have balanced my walking speed.

p.21: Yes, I try to increase the daily step count.

p.25: Yeah, actually, I see how few steps I take daily due to driving. I wouldn't think it was so little. The device gave me consciousness in this direction. I can say that it encourages you to move more during the day. I also noticed how long I sat unconsciously. There is a feature on the device that warns you to get up if you have been sitting for an hour, almost in every warning I get up at

> *least to take a tour in the room, I'm trying to stretch my legs. I also learned how long it takes for me to run the distance of 1km, I'm trying to shorten this time, improve myself.*

When participants' frequencies of data following and analysis were examined, it was observed that they varied as follows: There are 10 participants who stated that they follow their bio-data daily. There are 5 people reviewing multiple data per week; 7 people reviewing their bio-data once a week and 4 people monitoring data monthly or less frequently. The relationship between the frequency of data analysis and the tendency to change behavior that was deemed negative or inadequate after the evaluation was also examined. 19 of the participants stated that they tended to change their behavior after examining the data. Generally, the users assess their physical activity level by monitoring the daily step amount. And they report that if the amount is below the targeted count, they make more of an effort to be more active (p.4, p.21, p.24, p.26). Similarly, if they see that they drop behind their set goal, they try to do sports more weekly (p.5).They also evaluated their heart beat during walking, jogging or running and stated that they adopted their activity pace to increase or decrease heart beats during sports (p.8, p.15, p.25). With respect to the feature of sitting alert or sedentary alert, participants stated that due to these alerts they take short breaks and make some small exercise for cardiovascular health (p.24, p.26). 80% of the people who make daily data evaluation and 77.2% of the 22 people who evaluate one or more weekly data stated that they tend to change inadequate behavior. Of the 19 people who stated that they tend to change behavior, 14 of them have been using their devices for more than 12 months; 1 person for 9-12 months; 2 people for 6-9 months and the remaining 2 people have been using a tracker for 3-6 months. It is important to note here that while 40% of the participants in the group who have experienced the device for the shortest period of 3-6 months tend to change behavior, this rate increases to 77.7% in users who have used their devices for more than 12 months.

3- Benefits of the Data provided by the Device

The data provided by the device supports motivation to start and maintain physical activity. Personal activity tracking devices enable the person to set a goal such as the number of steps to be taken daily or that of the days to do sports per week. Thus, they play an important role in encouraging the achievement of the set goal. Some devices

have features like a sitting alert / sedentary alert (Fitbit Alta, Xiaomi Amazfit Pace, Samsung Galaxy Watch, etc.) or water intake notification (Samsung Galaxy Watch, Samsung Gear Fit, etc.). *S*ome smartwatches like Apple watch series 4 can notify user about irregular heart rhythm. There are also products that provide the user with vibration or audible feedback about instant heart rhythm and lap speed during running (Xiaomi Amazfit Beep, Garmin vívosmart HR, etc.). For instance there are participants who state that applying these features, they change their momentary behavior to achieve better results (Example: p.6, p.21, p.24). By storing data on sports activities, these devices also allow the user to plan their future exercises (p.8).

There are some sample quotes from participants' answers below:

p.3: Motivates for physical activity

p.4: Helps me to reach daily step count

p.5: Definitely encourages me to walk and doing exercise

p.6: Keeps my cycling activity track; helps me to awake by vibrating; encourages exercise

p.7: A handy product, keeps my record of cycling activity, thanks to feature of vibration, it's easy to wake up, and it definitely encourages physical activity.

p.8: Keeps my running, cycling and hiking track; assesses my performance and enables me to make a future exercise plan

p.9: Keeps me more active by warning me in every 20 minutes; helps me to track my targeted numbers in exercise and to adjust my heart rate

p.21: I can follow the distance-speed average of my bike tours and my heart rhythm average

p.20: Certainly yes, encourages me to be physically more active with heart rate monitor and pedometer

p.24: It has been helpful, I can instantly evaluate how active I am during the day from the amount of steps I take. I can record the walking and jogging exercises that I do outdoor or in the gym or area and I can keep track of my performance weekly, monthly or for longer periods.

For instance by using the device I have learned that I have a very low heart rate. It is useful to see the time I spent in sleep and my deep sleep duration. I can assess my sleep comparing my sleep activity monthly or seasonally.

4-Level of Dependency of Data Provided by the Device:

The results in this section are crucial for the present study since the main motivation of the study is to investigate a correlation between the frequency of use of the device and its effect on the user's

understanding of metric self-knowledge. We think that long term and daily use of tracking devices offers a new level in human-technology relationship. The status and value of the self-information depends more and more on the metric biodata and we think that since this correlation is in its early stages, a post-phenomenological framework which is, "a philosophical style of analysis", is suitable to engage a discussion-that will be in the last section of the paper.

As to the results, according to the answers, 38.4% of the users stated that they did not experience any change in the amount of physical activity they planned when they did not wear the activity tracker. These users stated that they wear the device for 1-3 hours a day and they do not feel any different when they do not wear it. On the other hand, %50 (13 people) of the participants who wear the device for 16 hours a day and check their data daily reported that their motivation for activity is negatively affected in the case of absence of the device. Amongst these 13 people, 6 people describe the absence of activity tracker with the words "lack" (p.1, p.5), "nakedness" (p.7, p.25) and 7 people "emptiness" (p.7).

Sample answers given to the questions asked to measure the dependency to the data are as follows:

p.1 and p.5. I am feeling that I lack something.

p.4: I feel like my physical activity is wasted.

p.7: Naked… absence...

p.8: I don't take off the device except for charging because I'm addicted to measure my bio data.

p.16: I am not dependent on the device other than the physical activity.

p.18: No device, no activity!

p.17: If I forget to wear it, I do not want to do physical activity.

p.21: If I forget the device, I would think my steps wouldn't be registered and I wouldn't know if I reached my daily limit.

p.25: I feel kind of naked. Even though I don't have a plan to do sports that day, I feel like doing sports will be meaningless, and I feel like I can't do sports. I feel as if my physical effort is not wasted when registered

p.8: Because I record everything, I do not want to go cycling without the device. Using a similar application from the phone, I transfer data when there is such a need.

p.25: I have, for example, records of how many days you have achieved the targeted daily step amount, I can see the last time I achieved my target and for

> *how long I kept achieving. Especially when I hit the target for two days in a row, if I forget to wear it the next day, and I get officially upset because I cannot keep my performance on record.*

When the frequency of data analysis is evaluated together with the potential change in activity pattern when the device is not used, a parallelism is noted. 7 out of 10 people who follow their activity data daily stated that they tend to do no activities when they do not wear the device. Some participants expressed their loss of motivation with salient statements such as "I quit faster because I couldn't measure exercise" (p.20), while others stated that they prefer not to do activities intentionally in more decisive expressions such as "no record if there is no activity" (p.18). No significant change was observed in the activity of the individuals (4 people) who evaluated data once a month or less. There is a positive correlation detected between non-use and non-activity for 12 out of 22 people (%54.5) who evaluated data once a week or more frequently. In addition, 3 people in this group stated that they had never observed the change in activity frequency because they never removed their devices.

CONCLUSION: IMPLICATIONS FOR HUMAN-TECHNOLOGY RELATION IN DESIGN

The results of the present study offer a different set of outcomes than the studies with positive or rather motivational results for both the use and adaptation of self-tracking technologies. It supports a rather early claim that these technologies have already begun to alter the human-world relationship. Besides the fact that self-tracking devices provide objective self-biometric data to its user, trigger self-reflection and as a result lead to a more substantial self-knowledge, they also carry a potential risk to make individuals more dependent to the technologically supported data more than needed for health purposes. The device does not only provide biodata but also determines the value of exercise that is not measured which is none. Registering the data becomes prioritized over exercising. Following the results of the present study it is quite ironic that a device that claims to improve our health may also discourage us from exercising if we forget to wear it. This finding suggests that self-tracking does not only affect our physical well-being but also may alter the value of immeasurable physical activity and favors a data-driven lifestyle. The enthusiasm for objective data seems to be slowly overpowering the fundamental motivation. Thus, we think the present study is a small but noticeable

step to shed light on the answer of the highly controversial question: What forms of knowledge—scientific or other—might self-tracking technologies produce in time? According to the output of the present study, at first glance the value of knowledge produced in the specific case of activity trackers does not diverge from the quantitative data that is provided with other self-tracking methods such as diary keeping or life-logging. Moreover, a wrist watch does not seem to offer an embodiment relationship like glasses which affects our relation to the world in a more intense way. However, the deed of obtaining quantitative data for the physical activity seems to change the embodiment relations of this gadget to human body in the sense that it alters the value of non-biometric information that we get from simply experiencing our bodies without a tracker.

The present study shows that the initial benefits and human-technology relation that the self-tracking device in question provides has the potential to change into a more dependent relationship between the user and the gadget. %50 of the subjects, who wear the device for more than 16 hours a day and who check their bio-data daily, report that their motivation is negatively affected if they forget to wear their smartwatches. Some even state that in the case of not wearing, they do not run or walk or they skip the planned physical activity for the day. This single result does not necessarily predict apocalyptic results for self-tracking technologies. However, it might be a good starting point to monitor the possible transformation in the value and the status of self-knowledge obtained via self-tracking technologies. The future of tracking technologies and the culture of "living by number" carries the risk of devaluing the immeasurable human experience or reducing all human experience to numbers. The data-driven and user-centric technologies enable the culture of lining by number. As the last words, we think that the present study is an early contribution to a future aspect of self-tracking technologies that should definitely need more empirical studies and a philosophical assessment with respect to its relation to the individual pursuit of self-knowledge and as to the technological biodata to more traditional ways of knowing oneself such as diary writing and life logging.

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