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Self-tracking of/and time: from technological to biographical and political temporalities of work and sitting

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Abstract

Self-tracking devices have been observed to accelerate time, be used sporadically and busyness being a barrier to use at work. Drawing on notion of multiple temporalities, this article expands the focus on temporalities of users' engagement with technologies to analysing them within broader biographical, institutional and political times. The argument is grounded in interviews with UK public sector office workers self-tracking sitting time that featured the following three themes: (1) the participants related their sitting to deteriorated work conditions after government austerity politics and redundancies, (2) the pressurised rhythm of work made it difficult to reduce sitting time and fostered a sense of discontent and powerlessness and (3) the workers did not self-track in their free time, defined as free from monitoring. We suggest that the analytical lens of multiple temporalities expands understanding of user experiences as well as illuminates lived contemporary political and institutional times, characterised by both discontent and powerlessness.

Keywords

Digital health, office work, sedentary behaviour, self-tracking, temporality

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Introduction

Critical conceptual research on self-tracking and temporality has argued that the devices accelerate time, as they encourage individuals to continuously track to improve their performance and health (Agger, 2011; Berg, 2017; Moore, 2018; Till, 2014). Empirical research on users' experiences of self-tracking and time has provided a counterbalance to critical commentary. Individuals have been observed not to continuously self-track to improve themselves but to limit their engagement with the devices (Didžiokaitė et al., 2018; Gorm and Shklovski, 2019; Hand and Gorea, 2018; Kristensen and Ruckenstein, 2018; Lomborg et al., 2018) or to use the tracking data to also slow down activities (Nafus and Sherman, 2014; Neff and Nafus, 2016; Ruckenstein, 2014; Schull, 2016; Sharon and Zandbergen, 2017).

However, empirical research on users has mainly focused on technological time or the temporalities of users' engagement with self-tracking devices. Drawing on notions of multiple temporalities (Adam, 1995; Sharma, 2014) and Raymond Williams' work on intersection between history, culture and technology (Coleman, 2018; Williams, 1977, 2003), we contribute to this research by analysing how users' experiences of self-tracking are shaped by the broader biographical, contextual and historical times. This approach offers new perspectives on broader temporalities shaping user experiences and on their connections with historical-political developments.

Our argument is grounded in interviews with UK public sector office workers, who tried out a wearable self-tracker to reduce their sitting time. The interviews featured three themes. First, the workers related their sitting and tracking to the on-going restructuring and redundancies, originated in the UK Conservative government's austerity politics, which had increased workloads and made them sit more. Second, participants used self-tracking to document time spent sitting, but the fast-paced rhythms of work rendered it difficult to reduce sitting and fostered a sense of discontent and powerlessness. Third, the participants were encouraged to wear the self-tracking device during evenings and weekends but did not do so, considering self-tracking or monitoring to belong to work time and sitting not being a problem in free time.

These perspectives highlight that self-tracking devices do not produce abstract or objective information about activity or users' body but the data that they create are contingent and contextual (Fors et al., 2020) and were shaped by three, intertwined temporalities. The findings illustrate how the *biographical-historical* time (Adam, 1995) or the personal histories of users, imbricated in political histories, shape engagement with technology. The specific *contextual-institutional* temporalities and rhythms (Lefebvre, 2004) permeating specific contexts, such as the fast, pressurised pace of public sector offices amid budget cuts, also guide self-tracking. Finally, the *social-cultural* dimension of time illustrate how it is categorised differently in different historical contexts (Thompson, 1967), so different times and activities happening in those times are experienced differently.

In what follows, we will analyse self-tracking in terms of multiple temporalities and how this elucidates users' engagement with self-tracking within broader personal and political times. We will first discuss literature on temporalities and self-tracking. We will then present our methods and our findings. In conclusion, we discuss our contribution to

discussions on self-tracking of/and time in terms of how notion of multiple temporalities both expands understanding of user experiences and illuminates lived, contemporary political and institutional times, often characterised by a contradictory sense of both discontent and powerlessness.

Temporalities and self-tracking

Critical conceptual research on temporality and self-tracking, and digital media more generally, has often focused on how technologies fuel general modern acceleration of time (Rosa, 2003) and where ‘always on’ digital technologies crowd out downtime (Agger, 2011). Conceptual discussions on self-tracking follow similar lines, noting how health and mental health trackers instigate individuals to self-manage their minds and bodies in the increasingly harried and precarious times, especially in the workplace (Berg, 2017; Moore, 2018; Till, 2014).

Research on users of self-tracking devices have, however, found that they do not necessarily get hooked to the continuous engagement or flow predicated on gamified self-improvement (Lomborg et al., 2018). Self-tracking, thus, does not necessarily change individuals’ behaviour but interweaves into their everyday life, often giving new meaning to things they already know (Fors et al., 2020). Studies have found that users often are most interested in the simple act of tracking itself, of keeping a record or documenting an activity, such as steps in a day, in order to become more aware of their actions (Kristensen and Ruckenstein, 2018; Lomborg et al., 2018; Rooksby et al., 2014). Becoming aware has been found to encourage users to change their activities, such as fit in additional walks to the day (Hand and Gorea, 2018). However, users have also been found to ignore negative feedback on missed targets as they are experienced as disruptive, stressful and demotivating (Gorm and Shklovski, 2019; Hand and Gorea, 2018; Kristensen and Ruckenstein, 2018; Lomborg et al., 2018). Especially members of the Quantified Self (QS) community of keen users have also been found to resist the devices’ push to intensify performance or health and use the tracking data for alternative purposes to cultivate mindfulness of the present or to slow down activities (Nafus and Sherman, 2014; Ruckenstein, 2014; Sharon and Zandbergen, 2017). Furthermore, self-tracking is also frequently discontinued, as users get bored, break the devices or use them for a specific period only to, for example, lose a set amount of weight (Didžiokaitė et al., 2018; Kristensen and Ruckenstein, 2018; Pink et al., 2018). Thus, studies on users have highlighted that they do not necessarily obey the temporal logics of the devices to track continuously and intensify their time use by taking on more activities, but that self-tracking is often episodic and may be driven by an interest in documenting rather than changing activities and customised not to disrupt the daily tempo of life too much.

However, social science research on users has largely focused on individuals who are interested in fitness and/or tracking and have been recruited as individuals online or from gyms and suchlike. Our project focused on a workplace, where the institutional context plays a more prominent role than in private self-tracking. Critical social research has argued that self-tracking in the workplace typically focuses on improving productivity, often amid increasing workloads and uncertainty, saddling employees with the affective labour of managing their wellbeing (Moore, 2018; Till, 2014, 2019)

or being driven by efforts to bring down company's health insurance premiums (McFall, 2019). Studies have found that self-tracking and digital prompts increase workers' awareness of sedentary behaviour or physical activity (Chung et al., 2017; Clemes et al., 2014; Gorm and Shklovski, 2016; Mackenzie et al., 2015; Vyas et al., 2019), but researchers have called for initiatives better customised to the needs of individual workers (Chung et al., 2017; Gorm and Shklovski, 2016) or the workplace (Vyas et al., 2019). Research on office workers and self-tracking has frequently found that busyness and lack of breaks constitute barriers to self-tracking or being more active (Chung et al., 2017; Clemes et al., 2014; Mackenzie et al., 2015). Lack of time has informed technological innovations in this area, including stand-up desks, exercise chairs and interactive sitting pads that encourage stretching (Ren et al., 2019). Workers have also been observed to drop tracking (Boulard Masson et al., 2016), including when tracking stress and productivity amid organisational change (Moore, 2018), but it has also been suggested that discontinuation is not necessarily a sign of failure when self-tracking is seen as part of general health promotion at work and leisure (Gorm and Shklovski, 2016).

Previous studies have offered a wealth of insights on temporalities of users' engagement with self-tracking devices, such as periodic and curiosity driven rather than continuous and improvement-oriented use and busyness as a barrier at work. Our research builds on these insights. However, we suggest broadening the focus to include biographical, institutional and historical temporalities within which self-tracking happens to open up new perspectives on user experiences as well as on historical and political times within which such experiences take place.

Multiple temporalities and tracking

To conceptualise multiple temporalities implicated in experience of self-tracking we draw on the work of Adam. Adam (1995, 1998) defines temporalities in terms of rhythms, timings and changes, which can be social or natural and at different levels from climate change to rhythms of sleep and refer to history and anticipate future. Adam's conceptualisation illuminates the panoply of possible temporalities that shape a phenomenon or experience, such as self-tracking. Sharma (2014) notes that temporalities articulate inequalities, so that busy jet-lagged businessmen and refugee cab drivers both experience problematic temporalities at work, but they are also very different and unequal. Furthermore, Williams' work on how cultural and technological forms contribute to the changing, lived and felt structures of feeling highlights how the use of technologies articulate particular historical and political feelings of the times (Coleman, 2018; Williams, 1977, 2003). Following these theories, we will analyse three key temporalities that were pertinent to our study.

First, experiences of self-tracking or health are always located at a specific moment within a person's *biographical-historical* time (Adam, 1995), where the past influences the present and anticipated future. For example, individuals with chronic, progressive disease may focus on maintaining the present or reminiscing the past rather than anticipating a future (Pierret, 2001), which can inform disengagement from self-tracking (Orme et al., 2018; Weedon et al., 2019).

However, biographical experiences are also nested within wider historical developments. Drawing on Foucault, it has been argued that self-tracking articulates the contemporary neo-liberal notion of health, which is the responsibility of individuals, ignoring structural impediments to wellbeing (Lupton, 2016). However, neo-liberalism also refers to specific historical economic policies, such as the austerity politics launched by the UK Conservative-led government after 2010 elections, which cut local authorities' budgets by approximately 30% and more after 2015 elections. The cuts were justified by reducing public debt after the 2008 economic crisis, rolling back the state after the previous Labour government, efficiency and the political slogan of Big Society, promoting local voluntary organisations to deliver services (Lowndes and Gardner, 2016). In our study, the two aspects of neo-liberal politics came together so that the county council office workers had been hit by budget cuts and redundancies, however, in this context, they did not blame their continuous sitting on themselves but on deteriorated working conditions.

Second, experiences of self-tracking are related to *institutional-contextual* temporalities, which permeate specific institutional and social contexts. The fast, pressurised pace of work brought about by on-going restructuration and redundancies that characterised the county council office workers' experience is an example of an institutional temporality. This temporality encompassed repetitive behaviours performed at a particular pace, which Lefebvre discusses in terms of rhythms (Lefebvre, 2004). Users who self-track for fitness in their free time may be better able to modify, such as slow down activities (Kristensen and Ruckenstein, 2018; Lomborg et al., 2018; Sharon and Zandbergen, 2017) than those in busy workplaces. Institutional-contextual temporalities draw attention to the fact that users may have different latitudes of freedom to control their time that articulate inequalities (Sharma, 2014).

Third, the social-cultural dimension of temporality refers to the way in which time has different meanings in different social and cultural contexts. A classic in this respect is Thompson's (1967) discussion of the gradual rise to eminence of clock time in the 18th century. Thompson observed that prior to the industrial revolution work and time were dominated by a task orientation, crops were harvested until the grains had been stored, and time was often cyclical based on seasons, weather and tides. Industrial revolution gave rise to the universal clock time, and time became a resource that could be bought and sold on the marketplace for labour. Thompson observes that there had been times for rest before but free time as a separate category became intelligible with hourly paid labour as time that was earned and therefore outside of and different from work. Thompson's discussion illustrates that times are historically produced as distinct categories demarcated by social norms, regulations, economic transactions and social struggles, such as the labour movement. It has been argued that the modern distinction between work time and free time is increasingly blurring, facilitated by digital technologies (Agger, 2011). Furthermore, it has been observed that digital devices are not only bringing work to free time but that they are also transporting the logic of measuring performance, typical of commercial environments, in both social media ('likes') and in self-tracking into everyday life (Beer, 2016). However, as will be seen, users can also challenge this blurring of free and work time.

While the temporalities can be separated analytically, they are intertwined. So, the cultural and social distinction between work and leisure, brought about by industrial

revolution and the labour movement (Thompson, 1967), is obviously also historical and eroded in many contemporary institutional work environments, highlighting that the temporalities were intertwined and reinforced each other.

Using the conceptual framework of multiple temporalities, we will in what follows discuss how officer workers' experience of self-tracking sitting time was shaped by biographical, institutional, historical and socially defined temporalities.

Methods

The qualitative study explored how individuals experienced self-tracking sitting time using a novel wearable device. The study was not an intervention as such, even if the device for self-tracking sitting time was designed to encourage behaviour change (reduce sitting) (Fors et al., 2020). We were simply broadly interested in exploring experiences of using a novel self-tracker at work. We recruited office workers as they have been identified as a particularly sedentary occupational group (Parry and Straker, 2013). Through a personal contact, we approached the wellbeing team, which offered for example voluntary yoga sessions and blood pressure checks, of a county council office in the UK Midlands, and they agreed to help us recruit participants for our study. The study involved office workers self-tracking their sitting time for 2 weeks with the aim of reducing and breaking up continuous sitting. The participants were given a novel device, also used in another study with individuals with chronic disease (Orme et al., 2018), worn around the waist, which tracked their sitting time and connected to their smartphones, displaying how much they had sat at different times of the day. The wearable also prompted participants to stand up by vibrating if they sat for too long; the participants chose the time of continuous sitting (typically 30 minutes) after which the device vibrated. The study was conducted between January and October 2016.

After gaining ethical clearance from our university, we advertised the study at various workplace health workshops and the workplace's e-magazine. A total of 32 people expressed an interest in participating, of whom 25 consented to participate in the study and 24 completed it. We followed standard ethical procedures of giving participants an information sheet about the study before deciding to take part and asking for written informed consent. Most participants were female (19) and their average age was 41 (range between 21 and 65 years), and they worked in a variety of administrative, up to middle managerial roles. As our participants were self-selected, they probably were more likely to experience sitting as a problem and/or be interested in self-tracking than council workers in general.

We interviewed the participants before and after wearing the self-tracking device for 2 weeks and they were instructed on how to use the wearable device in the first interview. The participants were invited to discuss their daily routines, including in and out of work, and to describe their sitting habits and experiences, both at work and at home and motivations for taking part. In the second interview, after wearing the self-tracking device for 2 weeks, participants were asked about how they got on in terms of sitting less, being prompted to stand up, and whether and when they sat less and wore the device.

All interviews were audio-recorded and transcribed verbatim. Thematic analysis was informed by the constant comparative method (Glaser, 1965) and NVivo 10 qualitative

software was used to facilitate coding. A selection of transcripts was read by both authors, and the coding scheme was developed together between them. Before the study, we did not foresee that the office workers had been significantly affected by the UK Conservative government's budget cuts with on-going restructuring and redundancies. This time of change and uncertainty coloured our study and led us to resort to literature on temporalities. The thematic analysis that we conducted was therefore abductive (Timmermans and Tavory, 2012), meaning that we did not start with literature on temporalities but related it to our findings, as the research progressed, reading back and forth between the material and literature.

The interviews featured three broad themes, related to temporalities: (1) participants perceived their *present* work environment as stressful and unhealthy, those who had worked in the office for long looked back on a less stressful *past* and most did not anticipate a less pressurised *future*; (2) participants attempted to reduce their sitting time but found it difficult because of the *fast pace of work*, fuelling a sense of discontent with the work environment; and (3) participants did not wear the self-tracking device in the evenings and weekends, which they considered as *time free* from tracking and monitoring and when sitting was not a problem. In what follows, we will discuss the three themes in detail. The names of the participants are pseudonyms.

Findings

Biography and history

When discussing their work and sitting in first the interviews nearly all participants brought up the past and on-going budget cuts, which had increased workloads:

I do enjoy, ehm, working for the council . . . in a way lots of positives and also lots of negatives . . . obviously with the difficult economic times it is really, really hard. (Betty, interview 1)

This excerpt illustrates that the anticipated self-tracking was nested in the biographical, personal as well as wider historical, economic times, which shape the experience (Adam, 1995).

Participants were motivated to try out the self-tracking device, because they were curious to know how much they sat, considering it 'useful information' (Harper, interview 1) and because they wanted to try reducing their sitting and 'be a little bit more active during the day' (Emma, interview 1). These motivations were informed by experiences of long hours of continuous sitting due to work pressure:

I would get in possibly about half past nine, ten o'clock, might be here till seven, eight o'clock and sometimes I will be here at half past nine, and I will look up at the clock and it will be two o'clock and I realise I haven't had a drink or I haven't had a lunch at all depends on the intensity of the work, which isn't good. (Ava, interview 1)

I used to make a conscious effort to go for a walk during my lunch, because I knew staring at a computer for so long isn't good for you, but I have so much to do, I can't make the time anymore. (Kim, interview 1)

The comments earlier highlight that motivations to self-track were shaped by experiences of increasingly dense or fast-paced and long worktime which made participants sit more. Kim's experience of present was also shaped by her experience of past when the pace of work was less harried. Many participants, who had worked longer in the council, discussed how budget cuts related to austerity had rendered work more stressful and uncertain:

The organisation is going through quite a difficult time at the moment, and like all councils are, we are facing huge cuts and redundancies all over the place, changing the way we are doing things, so people are under quite a lot of pressure. (Charlotte, interview 1)

I think it's probably the last seven years . . . it's become more a thing . . . you're not necessarily so secure of your job as when you first entered it, and that's just a reflection of the national situation and government finance. (Holly, interview 1)

In these excerpts, the participants located self-tracking sitting time at a particular traumatic historical moment of national government's austerity politics driven drastic cuts to local government's budgets that had fuelled redundancies and increased workloads. These conversations illustrate how sitting time is not universal or take place in an abstract office, but in a specific time, shaped by past that influences how much people sit as well as how they experience it.

Besides budget cuts, the increasing inability to move or to take breaks was seen to be fuelled by technological change, which had made office workers more deskbound:

We've become dependent on using technology, so whereas before I would be travelling around the whole of the county going to different meetings, now I am very much desk-based. (Ella, interview 1)

I much prefer to deal with people, and I do miss not going out of the office like I used to and the face-to-face meetings. I think that's what I miss the most, but, you know, things move on, don't they? Things move on, and I imagine it will continue to do so! (Raine, interview 1)

Here, another temporality intersects with sitting time, so that technological change, such as Skype meetings, had rendered office work more desk bound. The historical technological change not only rendered office work more sedentary, but it also changed the workers' experience of the work and sitting as increasingly lacking in terms of breaks, health, getting out and about and social interaction, making all these negatives to collapse into sitting time – the focus of our study. Furthermore, as indicated by Raine, the technological and policy developments, which had changed the past, also shaped the outlook on future, which was anticipated in terms of worsening pace of work and technological acceleration.

Overall, the interviews illustrate that participants were motivated to self-track out of documentary interest (Rooksby et al., 2014) to find out how much they sat as well as a desire to reduce sitting time. Drawing on Adam's (1995) notion of multiple temporalities, the motivations and expectations of self-tracking were shaped by biographical memories of past when the pace of work was more leisurely, experiences of present long

hours of sitting brought about by austerity politics as well as anticipation that working conditions would not improve in the future.

Institutional-contextual times

Participants used the self-tracking device to document (Rooksby et al., 2014) how much they sat. Some were positively surprised that the device did not prompt or ‘buzz’ them to stand up too often indicating ‘that it didn’t think I was sitting down all the time’ (Ella, interview 2). However, for most self-tracking made them aware of long hours spent sitting at work:

I thought I sat for probably about six or seven hours, but it’s like twelve hours. But I mean, thinking about it, most days I work ten or ten and a half hours at work, erm, and quite a lot of that is sitting even if I’m at meetings. . . . Yeah, so I was shocked. (Emma, interview 2)

Studies have similarly observed that self-tracking makes individuals more aware of their activity levels in the workplace (Chung et al., 2017; Clemes et al., 2014; Gorm and Shklovski, 2016; Mackenzie et al., 2015; Vyas et al., 2019). What is significant here is that self-tracking makes users aware of time spent in activities or sitting not in general but in a specific institutional-contextual situation of office work.

Most participants made an effort to reduce their sitting time during the study, seeking to comply with the self-tracking device’s basic premise. However, they often found it difficult to move more or break up sitting due to heavy workloads and social norms about sitting not being appropriate at certain times:

I wanted to use it for almost my own little study, um, and . . . the first week I was just gonna be normal, sit at my desk and whatever, but the second week I planned to integrate a bit more, standing up and walking around and doing things by the book as you should. It didn’t happen, cuz I had an absolutely diabolical week with my case work. (Kim, interview 2)

I can’t do my job without sitting down. Me and a colleague of mine . . . if we have a meeting, we try and go for a walk while we’re meeting, but otherwise I can’t go into a meeting and go, ‘I’m gonna stand up, if that’s alright with you’. (Liam, interview 2)

The excerpts earlier illustrate how temporalities of self-tracking are distinct in specific social contexts and for different social groups (Sharma, 2014), so that individuals’ agency to control their time and activities may be very different. Our participants described how the institutional rhythms of work demanded them to sit, so the rhythm of the work and the self-tracking device clashed with one another, producing arrhythmia, to use Lefebvre’s (2004) concept for rhythms being out of sync and contradicting each other.

However, some participants reported that self-tracking motivated them to break up sitting time, even if they were still concerned about it taking time:

I found that I did make some changes. I’d make a cup of tea, I’d go to the photocopier and printer in multiple trips to collect my stuff. I just had to be careful not to waste time at the same

time, but I did things like going down and talking to people about stuff rather than ringing them or sending an e-mail. (Zoey, interview 2)

Many participants articulated contradictory experiences of self-tracking making them more aware of how much they sat but not able to do much to reduce sitting. Studies have observed that busyness constitutes a barrier for increasing activity in the workplace, including when using a self-tracking device (Chung et al., 2017; Clemes et al., 2014; Mackenzie et al., 2015). In our study, this contradiction resulted self-tracking fuelling discontent with workplace, participants blaming the unhealthy amount of sitting on the workplace:

I did check the app quite a lot. I got a bit obsessed with it in the end. I'd have it in front of me and open it from time to time and have a look. I was talking to somebody about it and saying how we really should get up and move around, but this is the culture we need to change here in this organisation, though I can't ever imagine it happening. (Charlotte, interview 2)

I suppose I've just become used to sitting whilst I'm at work. I do get fed up with it as I used to be able to leave the office freely a lot more, but what can I do? (Theresa, Interview 2)

Studies conducted on users that self-track for fitness on an individual basis have focused on how they use it to modify their activities as well as take time off tracking (Gorm and Shklovski, 2019; Hand and Gorea, 2018; Kristensen and Ruckenstein, 2018; Lomborg et al., 2018). However, our findings and previous research on busyness in workplaces constituting a barrier to tracking and/or increased activity (Chung et al., 2017; Mackenzie et al., 2015) highlight that institutional-contextual temporalities shape and constrain agency to control time use in specific contexts (Sharma, 2014). Furthermore, office workplaces also differ. Our findings as well as Moore's (2018) observation that workers resisted self-tracking in an organisation undergoing a merger, suggest that workplaces riddled with negative changes and exhausting rhythms may experience self-tracking and other wellness initiatives in a critical way.

Self-tracking has been criticised for making individuals responsible for their health and being oblivious of structural impediments to wellbeing (Lupton, 2016). However, our participants resisted the principle of self-responsibility undergirding self-tracking by blaming the work environment for their inability to sit less and move more. Self-tracking, thereby, made the discontent about temporalities of work more visible through numbers. Our participants' experience resembled *sousveillance* (Mann et al., 2003) or practices of tracking the actions of authorities from below, in that they self-tracked unhealthy hours of sitting in a workplace. However, the discontent, sometimes accompanied by calls for common action to change work practices, was undercut by a sense of powerlessness, an anticipation that things will not change in the future. We contend that this mixture of discontent and powerlessness is a sentiment or structure of feeling (Williams, 1977) characteristic of contemporary personal and political times, and we will discuss it in more detail in the conclusions.

Work time and free time

In the first interview, the participants were encouraged to use the wearable device for self-tracking sitting time both at work and during evenings and weekends. Despite

encouragement, most of our participants did not self-track sitting time outside of work. They justified this decision by defining self-tracking as belonging to work time:

I guess I just saw it (taking off the wearable) the same as taking my shoes and tie off when I got home at the end of the day, a release from work. (Jacob, interview 2)

I wore it all day and took it off at about 7 or 8 when I got home from work . . . I just wanted to take it off and relax, I didn't feel I could do that with it on. (Derek, interview 2)

The excerpts earlier illustrate that self-tracking was shaped by cultural-social definitions of time. Participants defined work time and free time as separate, and the boundary between them was demarcated by rituals, including taking off the tie and the wearable. As discussed by Thompson (1967) industrial revolution and labour movement brought about a novel, categorical distinction between work and leisure, which has been argued to be eroded by increasingly pressurised and precarious worklife and fuelled by technology (Agger, 2011; Moore, 2018; Till, 2014). In this situation, our participants held onto the receding or residual (Williams, 1977) distinction between work and free time, resisting current, dominant trends.

It has been suggested that self-tracking in the workplace is labour, seeking to enhance performance (Moore, 2018; Till, 2014). Yet, our study is the first to find that workers perceived self-tracking for health as work. In the excerpt earlier and below office workers especially associated the monitoring aspect of self-tracking with work and ubiquitous monitoring and measurement (Beer, 2016):

I guess it felt like a work thing. My boss monitors me at work but at home I didn't want to be monitored or watched, I just wanted to do whatever I liked. (Nina, Interview 2)

It was good to see how much I do move around at work, or don't move, and I think I was more conscious of the fact oh, it's gonna be monitoring what I'm doing. So, I sort of didn't want to wear it at home because of that. I felt like that was my time. (Betty, interview 2)

Furthermore, participants also considered sitting not to be a problem in free time, drawing attention to how activities have different meanings in different times. Participants stated they are more active at free time and considered free time for rest:

I know I sit a lot at work. This thing has definitely shown me that, but I don't feel bad about it, as it clearly shows I work hard. I just wanted a break in the evening, and I am much more active at home than I am at work. So I just didn't see the point of wearing it on Saturdays and Sundays. (Holly, interview 2)

One participant had tracked sitting time during weekends at workdays to document the difference:

It was really interesting seeing the difference between my working day and my weekend, because I wore it at the weekend . . . I think I sat down for, what, I don't know, the weekends about 1 or 2 hours and obviously at the week it's sitting down most of the time. (Betty, interview 2)

Some participants had occasionally used the self-tracking device in the evening and during weekends and reported sitting less and being more active, even if they still noted that they mainly did not track during time considered an earned break from anything too laboursome:

I didn't really wear it at night, because I wanted a break, and felt like I was entitled to it. But I wore it one night, and when I did so, we didn't really watch TV. We did things round the house instead, like cleaning and stuff . . . It's good because we ate fewer sweets, we didn't just sit there stuffing our faces. (Noah, interview 2)

Previous research has observed that users often decide not to track when they perceive the technologies being too controlling (Hand and Gorea, 2018) or providing negative feedback (Gorm and Shklovski, 2019; Kristensen and Ruckenstein, 2018; Lomborg et al., 2018). Our findings contribute to these observations by illustrating how self-tracking is performed, or not, at times that are culturally and socially defined in a specific way, such as free and work time. Our participants did not self-track sitting time outside of work, as they associated it with the logic of monitoring, considered to belong to work-time. In doing so, they resisted the penetration of the market and competitive logic of measurement, monitoring and performance into everyday life, facilitated by digital technologies (Beer, 2016; Till, 2014). Our participants also did not track sitting time during their free time, because they did not consider sitting a health problem outside of work. This draws attention to the fact that activities being tracked have different meanings at different socially and culturally defined times.

The practical public health lesson here is that encouraging workers to compensate their prolonged sitting at work by being more active at leisure (Clemes et al., 2014) is not sensitive to the fact that work and free time are perceived differently. Furthermore, by not self-tracking at free time, the participants also articulated soft resistance (Nafus and Sherman, 2014) to the premise of self-tracking that health is the individual's responsibility, categorising sitting as problem for mainly work time and environment. This resistance was articulated through drawing on the perhaps residing or residual (Williams, 1977) separation between work and free time, brought about by industrial revolution and labour movement (Thompson, 1967), illustrating the importance of past times, definitions and struggles in the present.

Discussion

Critical conceptual and textual analyses of self-tracking have argued that it fuels dominant contemporary trends, such as acceleration and neo-liberal notions of individual responsibility for health (Agger, 2011; Lupton, 2016). Research on users has found that they may not go along with the behavioural the temporal expectations built into self-tracking devices (Didžiokaitė et al., 2018; Fors et al., 2020; Gorm and Shklovski, 2019; Hand and Gorea, 2018; Nafus and Sherman, 2014; Ruckenstein, 2014; Sharon and Zandbergen, 2017). We suggest that analysing multiple temporalities of self-tracking opens up new perspectives both on user experiences and on technology use within historical and political developments.

Exploring technology use in biographical-historical time contributes to empirical understanding of user experiences by highlighting how past influences present and anticipated future. It has been observed that experiences of chronic illness change people's approach to health interventions, as they may focus on living in the present or remembering the past rather than on improving health in the future (Orme et al., 2018; Pierret, 2001). However, experiences of self-tracking and other health technologies are not only related to developments in personal health but biographical experiences of organisational and historical change. Our participants' approach to self-tracking sitting time was influenced by their experience of past times, before austerity politics, budget cuts and redundancies, when they could take breaks, socialise and get out and about in their jobs. The experience of worsening working conditions also shaped participants' outlook on future, which was expected to be more harried and detrimental to health. So, analysing self-tracking within biographical-historical temporalities draws attention to how user experiences are shaped by personal and political pasts, presents and anticipated futures.

Analysing organisational-contextual temporalities highlights how rhythms, such as busyness of workplaces investigated in previous research (Chung et al., 2017; Mackenzie et al., 2015), guide, constrain and facilitate use of technology and behaviour. Social science research on health has observed that rhythms, such as rhythms of public transport or pace of activities in leisure centres, can importantly influence healthy behaviours (Phoenix and Bell, 2019). In our study, the pressurised, fast-paced rhythm of the workplace made it difficult for participants to break up and reduce their sitting time. Research of busyness and digital health interventions have framed it as structural constrain (Gorm and Shklovski, 2016) or barrier (Mackenzie et al., 2015) to be taken into account when designing health interventions. Yet, self-tracking may also document the problematic temporalities prevailing in a workplace, calling for changing working conditions rather than workers' behaviour. This critical, even potentially transformative awareness of unhealthy pace of work, however, was in our study interlaced with a sense of powerlessness to change things.

The cultural-social notion of time helps to understand how self-tracking by itself, as well as the activities being tracked may have different meanings in different times, such as work and free time. The contextual nature of sedentary behaviour has been noted in consensus statements pointing out that sitting may be experienced as rest in some contexts (Chastin et al., 2013) and research on self-tracking has noted that users may refrain from tracking on rest days (Gorm and Shklovski, 2019) or take contextual factors such as weather and traffic into account (Lupton et al., 2018). The observations highlight that activities, such as sitting time or steps, are not universal or same across different times and spaces, which is significant to understanding user experiences and designing interventions. Furthermore, by associating self-tracking with the market-based logic of measurement of performance (Beer, 2016) participants resisted the intrusion of this logic into their free time. This non-use held onto the residing or residual (Williams, 1977) distinction between work and free time, highlighting the continuous relevance of historical definitions and struggles at present.

Furthermore, exploring multiple temporalities not only yields new insights on user experiences but also helps in connecting the personal experiences to historical and political developments, highlighting how the biographical, institutional and historical temporalities are intertwined. Our participants' experiences corroborate critical commentary on acceleration

(Agger, 2011; Berg, 2017). However, rather than referring to general acceleration, our participants related the intensification of pace of work to the UK Conservative government's neo-liberal austerity politics and ensuing budget cuts after 2010. These cuts and redundancies accounted for the specificity of experiences reported in our study, underlining that self-tracking does not happen in a timeless workplace but that negative organisational change may foster a specific way of relating to technologies (see also Moore, 2018). Analysing self-tracking through the lens of multiple temporalities illustrates how acceleration and neo-liberalism are not almost natural abstract forces but rooted in specific historical, political and institutional events and decisions, which can, in principle, be changed.

Moreover, even though our participants tried to reduce their sitting time they did not internalise the neo-liberal idea undergirding self-tracking that health is the individual's responsibility (Lupton, 2016). Rather, they blamed deteriorated working conditions for their inability to take breaks. In this case, self-tracking fostered a discontent with working conditions and resembled *sousveillance* or surveillance of the powerful from below (Mann et al., 2003), in that it rendered long hours of sitting more visible. However, the discontent was undercut by a sense of powerlessness to change matters and an anticipation of workplace health getting worse in the future.

We contend that the sense of discontent and powerlessness is, in Williams' (1977) terms, a structure of feeling, more broadly characteristic of contemporary times. Williams (2003) underlines that structure of feeling does not refer to cultural and technological forms simply reflecting historical, political conditions, such as neo-liberalism. He argues that structure of feeling refers to historical, political conditions as felt and lived in all their contradictions, thereby typically both articulating domination and harbouring undercurrents of resistance and change. Berlant has discussed complaint as a contemporary sentiment close to our mixture of discontent and powerlessness in relation to female popular culture (Berlant, 2008). She argues complaint creates a sentimentality around an issue, such as the death of Princess Diana, that fosters a sense of recognition of wrongdoing, of affinity or not being alone, as well as fantasies about a change but being resigned that change will not happen (Berlant, 2008). Dean (2009) has discussed a similar feeling in relation to digital politics, which creates a sense of registering opinion, a sense of belonging but without typically translating into organisation and action. Williams' work helps to make sense of the contradictory, both critical and pessimistic, structure of feeling associated with self-tracking in an office workplace as having an affinity with broader contemporary feelings of recording or recognising grievances diluted by hopelessness about change as observed by Berlant (2008) and Dean (2009). Thus, analysing self-tracking from the perspective of multiple temporalities opens up new perspectives on experiences of self-tracking of/and time as well as how those experiences negotiate the historical, political times that we live in.

As an afterword, Fors et al. (2020) have suggested that researchers should be mindful of their own temporal orientation when studying technologies, shifting from analysing past use towards imagining better or more ethical futures. Our case draws critical attention to how self-tracking puts the onus or the mirror onto the individual users to cope with unhealthy work situations (Till, 2019), which our participants resisted. However, self-tracking could also be used to document deteriorating (work) environments and to foster collective action to change them in the future.

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