Running head: BEHAVIOURAL NUDGES

Abstract

In recent years, the role of self-tracking technologies has been investigated, debated and critiqued within qualitative research circles. The principal means by which self-tracking technologies seek to promote health-related behaviours and behaviour change is through the use of 'nudges'. Despite the increasing prevalence of nudge-style modes of body-mind governance, there remains little in-depth qualitative research on people's embodied responses to this form of behavioural management. The current study sought to address this lacuna by drawing on a form of empirical, sociological phenomenology to investigate the lived experience of being 'nudged' by self-tracking technology. Our phenomenologically-inspired analysis revealed how nudges can be perceived as objectifying by rendering the user's body the intentional object of awareness. Participants agentically engaged in a sense-making process, actively (re)interpreting the relevance of nudges and assessing critically the prescribed action in the context of their everyday life. Users expressed confidence in their own embodied sensory perceptions and assessment, and resisted having their bodily intuition displaced by 'unbodied' data.

Keywords: Nudges, self-tracking, embodiment, phenomenology of the body, objectification.

'I guess I was surprised by an app telling an adult they had to go to bed before half ten': A phenomenological exploration of behavioural 'nudges'

Introduction

Governments in the global north are making increased efforts to promote the importance of self-care and self-management, constructing citizens as responsible for protecting their own health and managing illness. The role of mHealth technologies such as mobile digital devices and their related apps and tools, and wearable devices more specifically, in exhorting such 'responsibilisation' is sociologically interesting vis-à-vis how users monitor their bodily functions and everyday activities. Great store has been set on the potential of wearable devices to act as preventative measures against ill-health by helping users to increase physical activity levels (see Maher et al. 2017; Mercer et al. 2017) and, perhaps more ambitiously, to 'control obesity' (see Mohammed et al. 2018). These small, lightweight technologies, easily placed on human bodies as they move around in time and space (Lupton 2017a), are designed to interface with smartphones to provide notifications, messages, and alerts relating to the user's health behaviour and lifestyle. The opportunity to monitor bodily processes and to identify 'bad habits' appears to be of particular appeal to those interested in self-discovery and self-improvement via personalized data: the so-called Quantified Self (QS) movement.

The principal means by which self-tracking technologies seek to promote health-related behaviours is through the use of 'nudges'. Despite the increasing prevalence of nudges, there remains little in-depth qualitative research on people's lived-body responses to this form of behavioural management. The current study sought to address this lacuna by drawing on a form of empirical, sociological phenomenology to investigate the lived experience of being nudged by such self-tracking technology. Eight participants were provided with a Fitbit ALPHA, MiFit or Apple Watch Series 3, and encouraged to use the device on a 24hr basis. We then explored in detail participants' accounts of their embodied and sensory experiences.

Background

Whilst acknowledging that people can be 'pushed' into self-tracking by others (e.g., as part of workplace wellness schemes), Lupton (2017b) argues that many individuals voluntarily choose to engage in reflexive self-monitoring because they wish to improve some aspect of their health. Self-improvement and optimisation lie at the heart of neoliberal discourses, where competition is valorised and consumers are led to believe that there is no limit to their potential (Türken, Nafstad, Blakar, and Roen 2016). In this context, wearable devices may be seen to serve as biomedical tools to promote healthy behaviour and increase 'health consciousness' or 'healthism': the 'preoccupation with personal health as a primary - often the primary - focus for the definition and achievement of well-being; a goal which is to be attained primarily through the modification of lifestyles, with or without therapeutic help'

(Crawford 1980, 368).

Advocates of self-tracking argue that practices of 'dataism' (a narrative legitimising the authority of algorithms and big data; Harari 2016) render the body more transparent – providing insights about corporeality deemed to lie beyond our imperfect and fallible sensory interpretations (Esmonde 2020). In particular, biometric processes that use self-tracking to quantify bodily features are said to operate by 'turning fleshy sensation, behaviour and perception into digitally produced numbers' in order to resolve the 'uncertainties, inaccuracies and vagaries of human embodiment' (Lupton 2016, 54). Esmonde (2020) posits that the process of self-optimisation is dependent on the creation of 'data doubles' (digital duplicates of our lives captured in data and spread across assemblages of information systems) to instigate a feedback loop of data that can be used to optimise one's potential. However, due to the complexities of people's lifeworlds and specific contexts, the mere collection and provision of data are unlikely to drive behavioural change to improve health. Instead, the principal means by which these devices purportedly motivate users to maintain healthy behaviours is through nudges that inform the user where they stand in relation to some idealized version of health and/or physical-activity levels. Despite the ubiquity of this form of behavioural management, there is little extant research on users' embodied and emotional responses to these nudges, and any impact upon consequent behaviours. The current paper addresses this lacuna in our understanding by conducting a phenomenologically inspired analysis of the lived, embodied experience of being nudged, drawing on data from UK-based users. The investigation of lived experiences is key to understanding how people use and respond to nudging technology within the context and constraints of their own lifeworlds. For, however useful these devices might seem to their designers and producers, they have to fit within the everyday lifeworld of users in order to be effective.

Behavioural nudges are intended to stimulate alterations to users' 'choice architecture', including the options available when making decisions about any aspect of behaviour (Thaler and Sunstein 2008). Wearable devices generally nudge users in two specific ways. First, nudges can be delivered haptically ('the haptic instant', Gilmore 2017), via a buzz or vibration to alert the user to having achieved a specific step-count target. Second, one might receive nudges in the form of visual messages or notifications delivered via an app. The Apple watch, for example, seeks to motivate increases in activity through messages such as: 'you closed one ring yesterday. Go for all three today', or exhortations to remedy sedentary behaviour: 'stand up and move a little for one minute'. Here, the user's behavioural data, such as numbers of steps taken, are compared to some norm or standard, and nudges act as prompts to achieve certain health-related targets.

Nudging is underpinned by a movement Thaler and Sunstein (2008) term 'libertarian paternalism', as people purportedly remain free to make whatever choices they wish (e.g., opting out of arrangements such as pension schemes). They are, however, also paternalistic in viewing it as legitimate for choice architects to attempt to steer people's choices in ways they deem will put users in an advantageous position. Specifically, nudges are intended to alter peoples' behaviour in predictable ways without 'forbidding any options or significantly changing their economic incentives' (Thaler and Sunstein 2008, 6). They are thus presented as a non-regulatory means of achieving behaviour change. According to Thaler and Sunstein (2008), people possess a host of cognitive biases, including a tendency to adhere to default options or to seek to preserve the status quo, which undermines their ability to make

decisions that are deemed to be in their own best interest. Nudges are intended to change behaviour in ways that contribute to healthier, longer lives, and their use is becoming increasingly pervasive in social settings (see Forberger et al. 2019), including in seeking to improve efficiency and reduce waste in Britain's National Health Service (Perry et al. 2015) Ultimately, nudges serve as 'a sort of compass to help individuals navigate a world of choices' (Schüll 2016, 13). The intention here is to 'empower' individuals to make the 'right choices' regarding their health; an approach very much in line with the neo-liberal ethos of the individualisation and responsibilisation of agents in relation to their own health care (Foucault 1980).

Although extant research has explored people's experiences of using wearable devices to track and monitor various aspects of their health (e.g., Lynch and Cohn 2016; Pink et al. 2017; Sharon and Zandbergen 2017; Smith and Vonthethoff 2017), researchers have only indirectly studied how self-trackers actually respond to behavioural nudges. In a study exploring young people's experiences of using healthy eating and fitness apps, for example, Honary and colleagues (2019) found that participants generally considered nudges to be motivational (if positively framed). However, findings also revealed that failure to reach a specific goal could lead to feelings of distress and guilt (see Goodyear, Kerner, and Quennerstedt 2019, for similar findings). Nudges are becoming increasingly pervasive in a number of life domains. Whilst great store has been set on their ability to improve health and to drive behavioural change, we still know relatively little about people's lived experience of receiving and engaging with these behavioural prompts. We do not fully understand how nudges might influence individuals' choices or shape behaviour. Perhaps most importantly, we have an impoverished understanding of how being subject to these injunctions makes people feel about their bodily engagement with their world.

Previous studies in this field have adopted a range of onto-epistemological perspectives, including constructivism (Esmonde 2020) and feminist materialism (Lupton 2018a; Lupton and Maslan 2018), and used approaches such as sensory ethnography (Pink, Sumartojo et al. 2017; Lupton, Pink, LaBond, Sumartojo, 2018). A recent special issue in this journal (see Goodyear and Bundon 2021) was dedicated to the use of digital qualitative research in sport, health, and exercise settings, with articles that included: an ethnographic study of Strava to explore self-tracking as a social practice (Couture 2021); an analysis of how Fitbit devices are used in workplace wellness programs (Esmonde 2021); and an exploration of how young women garner digital bodily capital on Instagram (Toll and Norman 2021). Although the foregoing body of work has undoubtedly shed light on how people engage with and through digitised data, researchers have yet to employ a phenomenological approach in seeking to understand in more depth people's lived, embodied experiences of receiving behavioural nudges. The current study addresses this gap by focusing on the experiences of users already engaged in physical activity. This is an important consideration as these users are not immune to self-responsibilisation or self-improvement discourses and indeed most likely to use wearable devices and become part of the QS movement (Vogels 2020). Before portraying the research project from which our data are drawn, we first describe the theoretical framework of sociological phenomenology (see also Allen-Collinson 2009).

Theoretical framework: sociological phenomenology

The term *phenomenon* (from Greek *phainomenon*) signifies an appearance, a perceived thing, an observable occurrence, with phenomenology being the academic study of phenomena, things as they are perceived in consciousness. For phenomenologists, particular those working from an existential perspective, body, mind, and world are fundamentally inter-acting, and mutually influencing, so that phenomena form part of our incarnate subjectivity (Author 2 2016). Modern phenomenology originates from the philosophical oeuvre of Husserl (1913/2002), who sought to identify and challenge scientific 'habits of thought' that left unproblematized fundamental assumptions regarding phenomena. It is existential phenomenology that provides the foundation for the form of empirical, sociological phenomenology (Author 2 2011) utilised here. Both existential phenomenology and sociological phenomenology focus on lived, *embodied* experience and sensory perception, including, in the case of the latter, in relation to sport, exercise and physical activity (e.g., Author 2 2018; Author 2 et al. 2019). With regard to sports-and-exercise-related studies, these include an exploration of women exercisers' body self-compassion (Berry et al. 2010) and mental toughness in exercise settings (Crust et al. 2014), to give two examples. This form of phenomenology is seen as offering a powerful framework for conveying the 'essences' and sensuosity of the physically-active body (Author 2 and Another 2015; Author 2 et al. 2018).

Also highly germane to the current research is Leder's (1990) phenomenologically inspired work, and particularly his conceptualisation of the 'dis-appearing' and 'dys-appearing' body. Leder describes how the body is experienced as largely absent from our conscious mind during everyday life and routines, occupying a 'backgrounded' position, so that it can been theorised as 'dis-appearing', with consciousness turned outwards to the external world. In contrast, when we find ourselves in a state of illness, pain or injury, the body shifts from this backgrounded position to feature in the foreground of attention, becoming a 'dys-appearing' body. At such times, our consciousness is no longer directed outward toward the world but becomes focused inward to the body, for example, to the site of discomfort or pain. A phenomenological perspective allows us to identify the core structures of such experiences by utilising a particular methodological approach, as detailed below.

Methodology and method

We draw on sociological phenomenology in an attempt to paint a rich and vivid account of the experience of being nudged. The phenomenological 'method' is not a method in the traditional sense of a technique, but requires adopting the phenomenological attitude to view phenomena 'afresh' as far as possible devoid of the everyday, tacit assumptions surrounding and veiling these phenomena. For many phenomenological researchers this requires engaging in the *epochē* (a rigorous form of bracketing), and undertaking *eidetic reduction* in order to arrive at the *eidos* or essence of a phenomenon (see Author 2011; McNarry et al. 2019). This approach can be used to identify and examine the core structures of exercise and physical activity experience whilst, in the case of a sociologically-informed phenomenology, acknowledging that experiences of embodiment are also socially-structured and socio-culturally situated (Author 2009). Thus, sociological

phenomenology would seem to hold much promise as a means of elucidating the embodied experience of being nudged; a phenomenon that to date has received little attention in the sport-sociological research literature.

Participants

A purposeful sample of eight participants (three male and five female, aged between 25 and 37) was recruited via the personal network of the first author, using the sampling criteria of: (1) self-identifying as being physically active; (2) not having used a wearable device previously. All participants lived in the United Kingdom and worked in a variety of fields including academia, nursing and teaching. We were interested to explore whether these (self-identifying) physically-active participants felt about meeting (or not) the targets set by the devices, particularly given that such devices often 'require' daily physical activity, rather than acknowledging, for example, a weekly total.

Having expressed an interest in participation, the first author met with participants individually to explain the aims of the study and demonstrate use of the wearable device. Ethical approval was granted by the University ethics committee, and all participants provided signed informed consent prior to data collection. Participants were provided with a Fitbit ALPHA, MiFit or Apple Watch Series 3, and asked to wear the device for a period of between 4 and 6 weeks. They were encouraged to use the device on a 24hr basis, including when exercising, but told they were not required to wear it while sleeping if they felt uncomfortable doing so. Participants were not encouraged to set specific goals/targets (e.g., a specific number of steps) although some of these goals are pre-programmed (e.g., the Apple Watch sets users a target of at least 30 minutes of exercise a day), but were asked to ensure the device was set up to deliver nudges. They were informed that the research team was not interested in analysing the quantitative data collected (e.g., number of steps, sleep time) and that they should delete the data (in the case of those who used the Apple watch) before returning the device at the end of the study. Interviews were recorded using a digital data-recorder and transcribed verbatim; details follow below.

The phenomenological interview

We utilised a phenomenologically-sensitive interview approach (Crust et al. 2014; Author 2 et al. 2018) in seeking rich, evocative, detailed accounts of peoples' lived experience of receiving behavioural nudges. The first step of this process involved conducting a bracketing interview between two of the researchers, in an effort to identify presuppositions that might have compromised the primary researcher's efforts to remain within the 'phenomenological attitude' of openness to the phenomenon. Although many qualitative approaches are interested in identifying *why* or *how* something has happened, empirical phenomenology is primarily concerned with describing in concrete detail the *whats* of participants' experiences. Researchers thus aim to provide rich, in-depth descriptions, and via the epochē, and reduction, to identify the 'essences' or key structures of the phenomenon. Interviews were conducted by the first author and averaged 55 minutes in length.

Commensurate with our sociological-phenomenological perspective, interviews were relatively unstructured and conversational in nature, allowing the exploration of emergent

ideas. Importantly, the interviewee is seen as a co-researcher and the expert on the subjective, *phenomenal* experience of the phenomenon under investigation. Interviews began by asking participants broad questions such as: *what was your experience of using the fitness tracker*? These questions were used to promote dialogic flow between the co-researchers. Broad questions were followed by more concrete ones in order to elicit increasingly detailed descriptions of interviewees' bodily experiences. These concrete situations and experiences were addressed by a series of open 'how' questions such as 'How would you describe the experience of being nudged towards a daily physical-activity goal?' This approach allowed us to garner a rich understanding of participants' experiences, and facilitated further elaboration when needed.

Analysis

Interviews were transcribed verbatim. Data analysis generally followed Giorgi and Giorgi's (2003) recommendations for empirical phenomenological research. Thus, before reading the transcripts, the first author assumed the 'phenomenological attitude', to engage in epochē/bracketing and then *eidetic reduction* (i.e., identifying essential or core structures of the lived experience of being nudged). We fully acknowledge that complete bracketing and reduction are impossible, not least because as researchers we cannot completely 'step outside of' our socio-cultural situatedness (Author 2 2010). The use of these phenomenological procedures or 'tools' is, however, considered part and parcel of sound phenomenological work even if these tools 'are engrained processes of an ideal nature, never fully realisable or "complete"' (Ravn and Hoffding 2017, 59).

Data analysis followed an iterative process. In the exploratory phase, two researchers engaged in initial impressionistic readings of the transcripts to gain an overall sense of the data. Each transcript was subsequently analysed carefully to question the classification of meaning segments into constituent themes, seeking to enhance the accuracy of the coding and inductive analysis. Maps of key words, concepts and then themes were generated, to aid preliminary classification. Once identified, constituent themes were then subjected to free imaginative variation to identify essential themes. Free imaginative variation involved considering whether the constituent themes were an essential feature of the nudging phenomenon. This involved 'imaginatively varying elements of the phenomenon initially identified to ascertain whether it remains identifiable after such imagined changes' (Author 2 2011). For example, one of the constituent themes was labelled 'awkward' to capture the difficulty participants faced in checking the fitness tracker as they exercised. However, we decided that nudges continued to make their presence felt even when participants were unable to look at their device. As such, we decided that being able to check a fitness tracker during exercise did not constitute an essential feature of the nudging phenomenon. Next, we shared our initial interpretations with participants in an attempt to ensure resonance with their lived experiences. We returned transcripts to interviewees and invited them to question the initial interpretations and offer alternative readings if they so wished. No alternative readings were suggested.

Findings

The findings presented cohere around two principal inter-related themes: (1) Social agency and 'nudge' interpretations; (2) Disruption and objectification. We begin with an analysis of how participants engage in a sense-making process, interpreting the relevance of nudges and whether or not they felt these prompts required action, within the specific context of their everyday life. Second, we consider how nudges could be disruptive, provoking a degree of confusion and even anxiety amongst participants. Nudges proved objectifying by obliging the user to make some feature of their bodily processes the intentional object of their awareness. This disrupted participants' pre-reflective bodily engagement with the world and led them to question their sensory interpretations of the experience.

Social agency and 'nudge' interpretations

A dominant theme identified from data analysis was how participants sought to make sense of behavioural nudges by considering and evaluating them in the context of their own lifeworlds. Participants' social agency was evident, as they did not respond automatically or unreflectively to commands to 'move more' or analogous instructions. Instead, they engaged in active interpretation and sense-making, making considered judgements about their need to act on, or respond to, the nudges they received. This decision was often based on the importance they attributed to the specific task in which they were already engaged. Participants were well aware they had been 'nudged', but on many occasions they proceeded to resist or ignore nudges deemed 'inappropriate'. A variety of reasons influenced decision-making; for example, participants frequently received nudges whilst at work. When engaged in tasks requiring concentration and sustained attention, or in social situations, they felt they had little choice but to ignore prompts:

> …it always seemed to happen [the nudge] when I was engrossed in something
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> which is why I hadn't moved for an hour – for the period I was wearing it I was
>
> doing a lot of reading, so I guess I was sedentary for decent chunks of time but it
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> actually didn't feel like it happened that often ….I suppose I did some
>
> mental-trade off as to whether it was worth interrupting what I was doing to get
>
> up and move around and most of the time I probably thought that it wasn't.
>
> [Stan, 35]

Other participants expressed similar sentiments when indicating their need to remain focused and/or sedentary for protracted periods of time in order to complete work-related tasks:

> Maybe I decide what I'm going to pay any attention to…this morning, I got in
>
> early and I got my big coffee and I sat down cos I had to get something done

without moving or doing anything or being distracted… it [Apple Watch] buzzed

at me twice, but because I was like: 'I have to get this done, if I stop now I'll lose

my train of thought,' so I ignored it [Charlotte, 33]

On Saturday I was writing all day...in my head I was like: I've committed Saturday

this is my only day to be selfish so 'go away'...I just dismissed it [Sophie, 29]

Many of the respondents needed to carry out tasks requiring intense concentration, whilst seated for significant portions of their working day. Nudges are designed to disrupt this immersion and 'sedentariness', and remind the user that they have been inactive for a protracted period. Although participants acknowledged that nudges made them aware of such inactivity, for many, these notifications did not *necessarily* result in immediate, subsequent physical activity:

…with the stand nudge, because it does remind you every hour if you haven't

done it [i.e., moved]..at one point I did get up because I didn't realise that I'd sat

down for an hour at least – I just got up and went to the loo or made a drink…at

the beginning it helped me recognise that an hour has gone quite quickly when

I'm sat at my desk…today I had to get loads done so I ignored that nudge but I

was aware that it went off twice. Now, if it does go off I'm aware that I've sat

down for a bit, I wouldn't instantly get up and do something – it'll almost be in

the back of my mind that I should do something soon. [Seamus, 35]

Most self-tracking devices are programmed to give nudges if the user has not achieved a step-count target for a particular hour. Notifications are delivered regardless of whether the individual has already achieved certain targets that day or earlier that week, however (i.e., they've exceeded 10,000 steps per diem or been highly physically-active in preceding days). Although this failure to consider overall activity could prove irritating, participants drew on their own embodied knowledge when deciding whether to ignore the prompts:

There were days when I'd go out to the hills and do 22,000 steps but then the

next day it would be giving out to me because I was sitting on my arse...it would

buzz – so that annoyed me a bit – it was the idea that you had to be constantly in

motion...I guess that's part of the reason why I ignored those prompts cos in my

mind I was like I know that I went for a four hour walk yesterday so why should I

do it today? [Stan, 35]

In these circumstances, participants could be said to have engaged in what Pantzar and Ruckenstein (2017) refer to as 'situated objectivity', drawing on prior experiences and current expectations to interpret the meaningfulness of the personal data they receive, *in context*. Participants' actions also constitute what Nafus and Sherman (2014, 1791) have termed 'soft resistance' whereby QS participants 'use the constant unfolding of meaning to critically question what constitutes relevant information, whether individual data points or entire categories of knowledge'.

Ultimately, participants were prepared to ignore decontextualized prompts because of their lack of relevance; they considered they had already undertaken enough exercise that day, or already knew that they had planned to exercise later that week, for example. They also accepted that there were likely to be days where they would be relatively sedentary but this would be 'balanced out' by substantial exercise engagement at other points of the week. Temporality was therefore identified in the data as a key element, with some participants noting how certain days/times were specifically designated for exercise:

> If you were part of a team or trained when you were young, you know that on
>
> Thursday I'll go on my bike and I'll kill myself then...for me I just pick two days of
>
> the week where I kill myself… [Sophie, 29]

As participants often actively planned and structured their exercise and physical activity, they reported feeling little concern or guilt when ignoring the various directives received. A decision about when to exercise was made based on a variety of contextual factors, including how participants felt at the time, and what type and intensity of exercise they planned to do over the coming days. This is indicative of an active sense-making process in which the articulation of one's personal data is 'a matter of connecting the metrics with the lived sensory experiences of one's body' (Lupton 2018b, 7), together with 'sensory attunement' (Author 2 et al. 2018) to the lived body.

Achieving targets or goals, or receiving positive reinforcement from the device (e.g., via the receipt of virtual rewards) also seemed to hold little meaning for participants. They reported gaining little satisfaction from this form of 'patronising' reward process, which had little impact upon their physical-activity levels:

> I'm still going to the gym later whether I get that notification or not…it doesn't
>
> change anything…there's no positive reinforcement for me: I'm not walking to
>
> satisfy my watch…. I'm fully aware that you need to stand, you've got such a
>
> sedentary job, it's just more, I've walked two miles to work, I lifted weights last
>
> night - don't patronize me [Tom, 27]

A compelling reason for participants to resist nudges was their cognisance that the devices fail to consider overall physical-activity level when 'commanding' an increase in movement:

> More often than not I would hit the move or calorie target if I'd walked the dog
> that day…I don't bother with that extra hour of standing if I'm already sat and
> settled and I don't want to stand up again…it's buzzed more during the evening
> but if I've done 11 hours of standing, I'm like: I'm good I don't need that extra
> hour [Charlotte, 33]

The meaningfulness and relevance of the prompts were therefore highly context-dependent and participants took into account their knowledge of past and future activity levels. Critical contextualisation ensured that a device's demands and exhortations were not privileged above subjective sensory experience. Like the teenage users of healthy eating and fitness apps in Honary et al.'s (2019) study, participants in the current study remained mindful about when, how and why they were engaging in physical activity, and expressed the need to disconnect from wearable devices if they begin to feel coerced.

Overall, participants sought to retain control over what the data meant and revealed about the physically-active self. Commensurate with our phenomenologically-informed perspective, we acknowledge that many habitual actions operate below the threshold of direct intentionality. Interviewees did not appear to have responded pre-reflectively to nudges. Instead, they exerted agency in the meaning-making process and largely resisted automatic adherence to normalised standards. These results resonate with those of Esmonde (2020) who found that female users of wearable devices both accommodated and resisted data-collection and analysis practices. That said, it is important to recognise that these acts of resistance are not necessarily constitutive of a conscious and critical resistance to sporting or health discourses (Markula 2003) more generally. Furthermore, it could be argued that one of the reasons for the majority of the participants in the current study to resist and reject behavioural nudges is their existing conformity with certain health ideals (Esmonde 2020) and 'health consciousness'. They did not, however, wish to feel pressurised or coerced into doing physical activity and they actively drew on their embodied knowledge in the decision-making process. Importantly, they resisted the notion that they *should* constantly be on the move.

Disruption, intentionality and objectification

For participants, their lived experience of receiving nudges appeared to be characterised by an objectification of their bodies. Nudges had a tendency to bring the pre-reflective 'disappearing' body (Leder 1990) into stark relief as a focus of intentionality, and thereby to provoke a certain degree of body-objectification and disruption to lifeworldly 'flow'. Many participants found themselves questioning the value of the behavioural nudges, and were left wondering why they had received nudges or what the prompt actually meant. In some cases, this process led them to question their own sensory interpretations and invoked a certain degree of bodily 'dys-appearance' (Leder, 1990):

It tells me to breathe every now and again which is probably the most frustrating one…it's about being mindful and taking your time and concentrating on your breathing, but I've not figured out a pattern as to why it's telling me to breath when it does…I don't particularly listen to it when it tells me to breath and I think those announcements don't mean too much…I never got to grips with that one…it was confusion…because I never looked at how it's calculated I just thought what does it know about this? When it went off I wasn't feeling particularly stressed or there was nothing that seemed to be the matter [Seamus, 35]

Together, this meant that nudges could prove disruptive to the mind-body linkage in participants' lifeworld by rendering some feature of 'background' bodily processing the focus of their intentionality. Pink and Fors (2017) argue that self-tracking technology can help users to reflect on relationships with their environment and on what (and how) they know through their encounters with it. Technology can thus mediate tacit ways of being-in-the-world. While this might very well be the case for many self-trackers, interviewees noted feeling no need to be constantly *told* where they stood in relation to some arbitrary ideal, and took a critical perspective toward the data provided, particularly in the context of their own bodily knowledge:

I think it just made me more conscious about my sleep, it's the sort of thing where I know I should get to bed earlier but I'm an adult...it's like the steps – I don't need to be told that I've made 10,000 steps in a day…I know that figure is bullshit [Sophie, 29]

I'm not that interested in what my phone tells me I should be doing…I kind of know it myself…I think generally you know if you've been healthy, you know if you've been active enough and you know if you're getting enough sleep. I don't think I need the re-assurance from a device prompting me or telling me any of those things [Seamus, 35]

Participants reported little desire to be prompted or offered advice regarding their activity levels in terms of some arbitrary measure such as the number of steps taken, but rather could draw on sedimented embodied knowledge (Author 2 and Another 2017) to determine sufficient physical-activity levels:

> If I do 40 minutes walking I have some sense that that's a reasonably good
>
> amount of exercise. I don't need to be told whether it's 8,000 or 10,000 steps… I
>
> notice that it does it but it's almost a conscious decision that I'm okay with what
>
> I've done today – I don't need you to tell me that [Stan, 35]

Participants possessed an embodied understanding of what constitutes an appropriate amount of exercise and actively tailored the amount undertaken in response to this somatic knowledge and also to corporeal feelings in-the-moment. Environmental interactions provide the body with a perpetual stream of kinaesthetic information and, what Leder (1990, 23) terms the body's 'ceaseless stream of kinaesthesias, cutaneous and visceral sensations'. With extensive practice, we become attuned to such sensations and experiences, and engage in more nuanced sense-making around physical activity. As such, participants' decisions about physical-activity levels were informed by somatic knowledge, and a reflective process based on physical sensations and a heightened bodily and sensory awareness (Author 2 and Another 2015; Parviainen and Aromaa 2017).

Interestingly, receiving nudges or rewards could prove counter-productive on occasion, resulting in some participants feeling that they had earned the 'reward' of being given latitude to break established patterns of healthy behaviour, and to indulge in less healthy actions:

> I guess in a way sometimes it would influence like, will I have a beer at night? Cos
>
> I know I'll have earned my beer…if it says today's been a great day and you've set
>
> a personal record for your exercise I'll probably be more likely to go home and
>
> cook a nice meal to meet that…it quantifies something that I probably wouldn't
>
> have done before...after a run (previously), I'd be like I have to continue this
>
> healthy behaviour whereas when it says today's been a great day and you've set
>
> a personal record for your exercise, I'll probably be more likely to go home and
>
> cook a nice meal to meet that. There's some kind of reward scheme in my head
>
> [Sophie, 29]

In these instances, the device's reward system disrupted the normative structure of the everyday lifeworld in terms of breaking positive bodily habits, such as healthy eating. Participants also indicated that some notifications actually caused them to question their own sensory interpretations and embodied understandings, again being disruptive and also anxiety-provoking, but also failing to take into account the wider context:

> I started, to an extent, to doubt my own ability to judge how well I was sleeping
>
> or I was looking for reinforcement from the app either confirming my suspicion
>
> that I hadn't slept well or confirming my suspicion that I had slept well, but it was
>
> more upsetting to hear that I'd slept badly and have that reinforced than it was
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> rewarding to hear that I'd slept well…Even if I got a really good night sleep it
>
> never praised you for getting a good night sleep it would show you positive stats
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> but still say that you went to bed too late and then when you got a really bad
>
> night sleep it would say that this will cause physical and mental damages [Stan,
>
> 35]

In this case, the nudges merely caused confusion and anxiety, rather than providing an insight into bodily functioning. Proponents of the QS movement argue that data can provide an 'objective truth' about bodily processes that are beyond our imperfect and (merely) subjective sensory understanding (Van Dijck 2014). Instead, we found that nudges can cause participants to worry about and question their health status or behaviour, even if they happen to be perfectly healthy (in relation to normative constructions of 'healthy'). Thus, rather than providing clarity about participants' health, there were occasions when nudges provoked anxiety, even leading to 'negative' corporeal indicators:

> There's the other ones that would more concern me – you'd sit there and it
>
> would vibrate. I've got a notification [about] who loves me today and you look at
>
> your watch and it's just the watch vibrating and it'll be like 'a minute of peak
>
> breathing can lower your heart rate' and I'm like is my heart rate fast? My first
>
> thought was: 'oh, is my heart rate too fast? Am I concentrating too hard at work
>
> – what's going on?' Then I'd go monitor it to see what it is and then because I'd
>
> monitor it, it would shoot up anyway [Tom, 27]

Instead of proving informative, nudges were often perceived as perplexing and confusing, suggesting to the user that a feature of their behaviour was unhealthy or problematic when it might merely have been reflective of the everyday bodily fluctuations that characterise the body-mind-world nexus (Author 2 2009). Furthermore, many participants expressed frustration with the lack of explanation for disruption to their experiential flow:

> It must be registering that I'm not active but my heart rate is going up a little,
>
> that must be the trigger for reminding you to breathe…but I felt like it did it at

random points…initially, I might have thought: what am I doing? But I couldn't

associate it with anything in particular…perhaps I was stressed, but it didn't feel

like that…that was the only one I felt like I don't want to take a minute and

breathe, can I just do what I'm doing now? [Charlotte, 33]

Nudges in the form of visual and/or haptic sensations, for example, seek to bring the body, and various bodily processes, to the foreground of conscious reflection. Unfortunately, nudges may prove disruptive because they are, by their very nature, objectifying in rendering the user's body the intentional object of awareness.

Discussion

Drawing on sociological phenomenology (Author 2 2009, 2011), here we sought to describe the lived experience of being 'nudged' to engage in health-related behaviour. At first glance, one might conclude that these physically-active participants had little interest in using wearable devices and quantifying physical activity. Importantly, though, participants did not necessarily decry the value of wearables, or self-tracking more generally. They did, however, question the regimented and rudimentary manner in which fitness trackers seek to capture 'health' and influence their behaviour. This has interesting implications for the self-tracking movement whose advocates often argue that data can provide insights that are beyond our imperfect sensory understanding (see Van Dijck 2014). In contrast, study participants expressed confidence in their own sensory interpretations and resisted having their bodily intuition displaced by 'the medium of unbodied data' (Smith and Vonthethoff 2017, 19).

Importantly, nudges often failed to ensure that participants met the daily physical-activity targets recommended by the wearable devices. Participants made conscious decisions to ignore nudges, which, ironically, are intended to operate below the threshold of conscious awareness. Nudge theorists argue that agents are not 'rational' decision-makers and, if left to their own devices, will make choices not in their best interests (Thaler and Sunstein 2008). Interviewees, however, were highly aware of what constitutes healthy behaviour and actively sought to make healthy choices, but on their own terms, drawing on their own embodied knowledge. Specifically, they seemed to resist the abstraction of their bodies by prioritising their own sense-making and somatic knowledge when making situationally-relevant decisions, in the context of the particular challenges faced at a given point in their lives. In this sense, participants could be perceived as rebelling against machine-learning, in terms of how technology becomes 'knowledgeable' about patterns, regularities and situations in its owner's life (Wheeler 2018). Individuals did not want their lives to be predicted and controlled, and so actively resisted the routinisation of exercise and other health-related behaviours by external forces.

Although some theorists argue that wearables can enhance bodily awareness and sensory understanding (see Pink and Fors 2017), nudges often had the opposite effect for participants in our study, constituting a disruption to everyday bodily 'disappearance' and

even provoking bodily 'dys-ease' (Leder 1990), and a dissociation between mind and body (Lupton 2013). From a phenomenological perspective, in the 'natural attitude' of everyday, the body constitutes the *subject* of experience (*Leib*, or lived-body) rather than the *object* body (*Körper*). As such, our pre-reflective engagement with the world in the natural attitude typically involves a 'disappearing' body that remains in the margins of awareness (Leder 1990). However, the nudges used by wearables, encourage the user to think about bodily processes in terms of ideals or norms, which can make the body 'dys-appear' (Leder 1990) as something problematic or normatively 'deviant'. According to Parviainen (2016), digital technology treats the body as a material object – one that can only be thought of in terms of the objective or three-dimensional geometric space it occupies. This results in users turning attention back on the body in order to interpret and make sense of device notifications and 'demands'. By contrast, interviewees reported wishing to remain attuned to their bodily sensations, kinaesthesias, and the dynamics of the innesphere in a 'manner that makes immediate sense and intuitive understanding' (Parviainen 2016, 64). This allows them to make decisions that are intimately linked to both past experiences and how they feel in the here-and-now, not in terms of some idealised vision of who they might become.

The increasing popularity of nudges as a form of behavioural management in exercise settings raises a number of important ethical questions about the governance of health in contemporary society; for example, whether policy-makers are supportive of nudging interventions because they deem choice architects to be 'up-front' and transparent about how and why they are trying to modify people's behaviour? Although users of wearables may consent to the configuration of their choice environment, and be aware of being nudged, this apparent transparency doesn't make this form of behavioural management any less problematic. Nudging may represent a less opaque form of biopolitics than traditional modes of surveillance, but nevertheless, users continue to be subject to normalizing judgements, exacerbated by the fact that many nudges operate via bypassing reflective cognition (Fage-Butler 2020). Indeed, many of the behavioural prompts given by wearable devices might be deemed to represent "non-educative nudges" which serve to diminish autonomy, as users are not encouraged to make informed choices about their health-related behavior (see Busch et al. 2020). For example, there is little evidence that 10,000 steps provide a meaningful barometer of "good health" and yet exercisers are often nudged towards this target. This form of 'hard' paternalism limits the agent's autonomy as users may adhere to behavioural prompts whilst remaining unaware of how their choice was shaped through nudging. "Educative nudges", on the other hand, seek to steer people in certain directions by engaging their reflective capabilities (Busch et al. 2020). Future research might therefore explore how behavioural prompts could be offered in ways that encourage exercisers to make reflective choices about their own health-related behaviour. Whilst our participants were well-placed to draw on their embodied knowledge to challenge non-educative nudges, less experienced exercisers might not be so well-equipped. The use of phenomenological or digital methods might prove beneficial in this regard by allowing researchers to explore how exercisers make informed choices about the amount and type of physical activity in which they engage. Digital qualitative research may be particularly well-suited to an exploration of how inexperienced exercisers *feel* about being subjected to continuous alerts and prompts that ignore their social context, wishes, values, or intentions (current and longer-term).

Conclusion

Our findings point to the need for policy-makers and designers of wearable devices to reflect carefully, and exercise caution in terms of how they seek to promote physical activity. It is important to consider how we might promote self-care in a manner attentive to the everyday lifeworlds of users, whether physically active or 'sedentary', and sympathetic to the complexities of peoples' lives and their relationships with their bodies. Although our already-active participants may be capable of resisting the regulatory intentions of nudges, future research could usefully explore the embodied experiences of those deemed sedentary, and who may be explicitly targeted by nudging interventions. Research could also identify how policy-makers could counter the self-improvement discourse, and thereby avoid excessive forms of individualism and self-responsibilisation, through promoting a 'logic of care'. This would look beyond the individual to acknowledge that socio-cultural factors strongly influence people's attempts to engage in healthy lifestyles. As Gorm and Shklovski (2019, 2508) argue, "good care recognizes the complexities of life, trying to strive for improvement but knowing that the process is not linear. This is not an excuse to give up when challenges arise, but a forgiving and persistent view on improving health". In order to enhance effectiveness, and to promote the adoption and maintenance of healthy behaviour, policy-makers and designers need to consider carefully how wearables - and nudges - could operate in a way that remains sensitive and appropriate to the lived-bodies and lifeworlds of users.

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