The geographies of digital health – digital therapeutic landscapes and mobilities

# Abstract

Digital technologies have long impacted the field of health, causing fundamental changes for the geographies of the production, movement, and consumption of health. Despite this, there is limited health geography engagement with digital health, and an understanding of how digital health affects the spatialities of health remains underdeveloped. Here, using autoethnography, I reflect on personal encounters with digital health in the UK to initiate analytical attention into the geographies of digital health. I demonstrate that digital health technologies are interconnected and increasingly structure access to health, impacting the equality of health; and that digital health disrupts existing, and creates new, therapeutic landscapes and mobilities.

# Introduction

Digital technologies have long impacted the field of health. From the 1970s, the expanding availability of personal computers allowed health data to be increasingly digitised and centralised in local, national, and more recently global databases (Lupton 2017b). Concurrently, advances in telecommunications technologies enabled the rise of telehealth, allowing certain healthcare activities to be carried out via distance (Cutchin 2002). Since the turn of the century, digital advances fuelled by the rise of smartphones and mobile devices, Web 2.0, developments in artificial intelligence, and the increasing affordability of wearable healthcare technologies (WT) have further impacted the sphere of health, largely gearing health towards person-centred, at-home care (Lupton 2017a; 2017b). The shift to digital technologies for delivering healthcare has significant implications for the geographies of the production, movement, and consumption of health.

Space and place matter to digital health. On a basic level, space refers to ‘*where* a location is’, whereas place ‘is the interpretation of space’ or ‘*what* a location is’ (Tunstall, Shaw, and Dorling 2004). Addressing health through a geographical lens thus requires consideration not just of where health happens, but of what happens in spaces that may impact health. A strictly spatial analysis may, for example, bring attention to geographical differences in health outcomes, whereas a more place-based approach would seek to understand why differences emerge. Despite this understanding, little research has sought to examine the online as a new space of health, although some emerging work considers the importance of online places such as online patient support communities in promoting health (Loss, Lindacher, and Curbach 2014). Similarly, there are few examples of research addressing the ways that digital health interventions alter existing spaces (i.e., green spaces) and places of health (healthcare institutions).

The lack of engagement by geographers becomes evident when searching in this journal for ‘digital’. The few results that are returned examine the use of digital tools such as WT to measure health outcomes (Kestens, Thierry, and Chaix 2016), or social media sites to recruit patients (Nelson et al. 2019). This research is being conducted *with* rather than *on* the digital and does not examine the implications of the digitisation of health. Beyond *Health and Place*, geographical research addressing specific forms of digital health, be that fitness apps (Barratt 2017), telehealth (Cutchin 2002), mHealth (Cinnamon and Ronquillo 2018), cyber-pilgrimage (Williams 2013), big data (Lewis 2018), or volunteered geographic information (McLafferty, Schneider, and Abelt 2020) does not situate findings within a wider understanding of digital health. A lack of geographical engagement with digital health means opportunities for cross-disciplinary engagement and knowledge building are lost, while an understanding of how digital health affects the spatialities of health remains underdeveloped.

To address the spatiality of digital health I adopt an autoethnographic approach, bringing close attention to three mundane encounters of digital health consumption: eHealth for accessing primary care; geographically distanced telehealth; and WT for fitness. Analysing my autoethnographic reflections as a critical health geographer, it became apparent that complex connections between my personal health encounters in Newcastle-upon-Tyne and global and local processes were shaping new and different spaces to experience and access health. Through my observations and reflections, alongside my engagements with digital health and health geography literatures, therapeutic landscapes and mobilities emerged as appropriate conceptual lenses to connect my experiences to broader social processes. These findings and my reflections on them are intended to structure future health geography enquiry into digital health, but following Ash et al (2018, 35) this is not a call to reframe all health geography into geographies of digital health, rather to consider how digital health ‘reshapes many [health] geographies, mediates the production of geographic [health] knowledge, and itself has many geographies’.

I begin by outlining the appropriateness of autoethnography in initiating geographic engagement into digital health. A review of existing digital health literature follows, where I discuss the applicability of therapeutic landscapes and mobilities as conceptual framings for addressing the geographies of digital health. The remainder of the paper is structured into three sections, each addressing a different digital health encounter. Five key findings permeate these discussions: i) digital health technologies are inherently complex and interconnected, ii) access to health is increasingly structured by digital technologies, iii) digital health has complex implications for issues of access and equality of health, iv) digital health disrupts existing spaces where health happens and creates new ones, v) digital health both eases and adds frictions to the mobilities of health that itself has implications for patient empowerment. The spatialities or geographies of digital health are thus highly complex.

# Autoethnography

Autoethnography refers to a standalone set of methodological approaches that attempt to understand personal stories through broader social processes (Burnier 2006). Its central goal is to contextualise personal experience within social and theoretical worlds in a way that ‘exceeds the autoethnographer’s individual experience’ (Butz and Besio 2009, 1666). Autoethnographic approaches orient the researcher to the research tool, understanding that the trained eye of the privileged researcher can make visible heretofore hidden observations (Denshire 2014).

In health research, autoethnography is useful to circumvent many of the access limitations resulting from the confidential nature of health data and the often vulnerable status of patients (Chang 2016; Birk 2013; Liggins, Kearns, and Adams 2013; Kearns 1997). Furthermore, Lupton (2017a), in examining the sociology of digital health, argues emotions and sensory engagements that are difficult to uncover from talking methods are nonetheless vital to examine. In digital research, autoethnography is praised for its ability to provide ‘a level of detail that might be otherwise difficult to draw from interviews’ when discussing the ‘complexity’ of digital processes (Fraser 2019; see also Bodo et al. 2018). Finally, concerning geographical research, Butz and Besio (2009, 1666) argue that when understanding complex spatial processes, autoethnography is useful ‘to trace the intimacies of these ﬂows and formations from the inside out’. Although methodological challenges, such as the challenge of balancing academic and personal identities exist, autoethnography is thus useful in overcoming some of the methodological difficulties associated with researching health and the digital from a geographical perspective.

There are multiple autoethnographic traditions[[1]](#footnote-2). What follows is a personal experience narrative where I as a social scientist ‘take on the dual identities of academic and personal selves’ (Ellis and Bochner 2000, 740). My reflections adopt an informal narrative prose, capturing events and emotions. In reflecting back on and analysing my experiences I also consulted personal notes, emails, texts, photos, biometric, and secondary data (Kent 2020; Chang 2016). Italics separate academic and autoethnographic voices. However, my italicised reflections *already* connect to academic theory, a result of my position as researcher, while my academic analysis is *already* imbued with reflexivity (see also Kent 2020). Additionally, my privileged position as a digitally literate, capable, and connected person with sole access to multiple digital devices, decent Wi-Fi and mobile data, who lives alone in the North East of England, has legal access to the UK’s National Health Service (NHS), and has disposable income, structured my digital health engagements. I am also digitally ‘comfortable’[[2]](#footnote-3), tending to prefer and opt for digital choices. In many cases, this privilege and digital comfort afforded me greater access to health. Before turning to the three ‘epiphanies’ (Ellis, Adams, and Bochner 2011; Boğaç 2020) or key encounters that prompted my reflections on digital health, I chart the social and theoretical contexts of digital health.

# Understanding digital health

Digital health is a wide set of practices and technologies, and a study of academic enquiry. While other terms may be used, ‘virtual’ or ‘cyber’, ‘digital’ has gained most traction in industry and academic debates. Digital health includes both online (through the Internet) and offline (through electronic devices) forms of health care delivery, and consists of a huge, sprawling array of activities (see Figure 1). Digital health technologies collect and analyse vast amounts of health-related data to make diagnoses, assess population health indicators, and plan for healthcare (Vashist et al. 2014). They also facilitate the delivery of healthcare, by providing patients access to healthcare workers from a distance, providing healthcare workers time-saving tools, providing opportunities for more person-centred care interventions (Host, Turner, and Muir 2018), and by facilitating and encouraging self-care practices (Lupton 2017a; Mosa, Yoo, and Sheets 2012).

Medical sciences, health studies, and critical social sciences all address digital health. Quantitative and qualitative approaches are used to understand a variety of issues from patient satisfaction, accessibility, accuracy, and barriers to implementation. Significant research, particularly within medical approaches assesses the efficacy of digital health technologies. This literature is overwhelmingly celebratory about the potential of digital health, arguing that it both empowers patients and reduces the costs of health through facilitating the collection of vast amounts of health data that can inform local, national, and global healthcare planning and management strategies (Mesko 2018). While some attention is brought to issues of access and exclusion (Host, Turner, and Muir 2018), this work leaves no space to question the forces that drive the expansion of digital health nor to understand the wider social, cultural, economic, and political ramifications associated with digitising health. Digital health interventions may ‘work’ from a medical perspective, but we are left with no understanding of how they work, and only a partial understanding of who they work for.

Critical social science approaches seek to address these gaps, theorising digital health technologies as ‘sociocultural artefacts’, shaped by and shaping social, political, cultural, and economic life (Lupton 2017b). For instance, where celebratory approaches measure mobile phone ownership (Graetz et al. 2018), critical approaches pay attention to issues of breakability, costs associated with usage, and household power dynamics that can render mobile phone owners unable to access mHealth (Nahar et al. 2017). Others pay attention to the ways that people co-opt existing digital devices for health purposes such as accessing health information not usually available to them, considering how digital change may be driven by informal practices rather than by top-down planning (Hampshire et al. 2015).



Figure 1: Mapping out the interconnected elements of digital health. Author’s own image.

Significant work in this vein attends to the neoliberalisation of care that digital health facilitates, questioning the extent to which patients are truly ‘empowered’ (Burr and Morley 2020). Examples include examining how menstrual data from health and fitness apps can be used to direct targeted advertisements to app users (Healy 2020), interrogating the ways digital health can result in a transfer of health-related tasks from provider to patient (Mathieu-Fritz and Guillot 2017), or questioning how moving care into the home changes home practices and can threaten bodily autonomy (Oudshoorn 2008). Notwithstanding the centrality of place to these discussions, and in spite of recognition that digital health allows clinical activities to be ‘diffused into every possible space and temporal location’ (Lupton 2017b, 102); issues concerning the geographies of digital health are overlooked, and geographic concepts are evoked without analytical framing (see also Cinnamon and Ronquillo 2018).

## The digital in health geography

Where geographers do engage with digital health, the digital tends to be secondary if not inconsequential to the primary interests in health and space/place[[3]](#footnote-4). This is despite recognition that since the 1990s, ‘technology has become the prime motivator and facilitator of this new spatialized health care’ (Andrews and Evans 2008). A key exception is Cutchin who in 2002 proposed a new ‘virtual medical geographies’. He adopted the lens of territoriality to understand how telemedicine alters the regionalisation of care and describing the ambivalent nature of ‘virtual medicine’ as ‘both beneficial and detrimental to the way medical care is carried out and experienced’ (Cutchin 2002, 35). However, perhaps lost in the shift towards health geographies, Cutchin’s ideas have been widely overlooked. There is a need to return to and update these ideas to address digital health as it exists today, going beyond the narrower conceptualisations attached to both ‘virtual’ and ‘medical’.

As noted, more recent geographical explorations into digital health avoid the ‘digital health’ terminology and can be understood as ‘fragmented’ (O’Connor et al. 2016). Nevertheless, geographers have brought attention to the persistence of geographical digital divides between urban and rural areas (McLafferty, Schneider, and Abelt 2020), and have examined how digital media circulates health information and disinformation, again pointing to its ambivalent nature (Nerlich and Koteyko 2012).While the findings from such research are useful and inform some of what follows, separating discussion from wider digital health debates reduces opportunities for interdisciplinary knowledge building which is enhanced by clearly articulating research in ways that allow it to be disseminated to other disciplines. Additionally, although I reflect on disparate elements of digital health, wider conclusions and patterns emerge.

## The therapeutic landscapes and mobilities of digital health

A spatial analysis of digital health should both examine how spaces and places of health are affected by the digital, and recognise that the digital creates new spaces and places of health. Therapeutic landscapes, a concept that examines the interplay between health and the physical, representational, and more-than-representational elements of place, is thus a useful starting point from which to examine the geographies of digital health, enabling us to recognise and include online and digital spaces as landscapes that facilitate, or inhibit, the healing process (see Williams 2013 for a more limited application of therapeutic landscapes to online pilgrimage forums).

First introduced by Gesler (1992) as a ‘geographic metaphor’[[4]](#footnote-5), therapeutic landscapes allow us to understand how certain places are imbued with therapeutic or healing qualities. During initial applications, scholars turned to non-traditional environments and symbolic landscapes (Gesler 1996), and ‘therapeutic’ initially signalled that alternative forms of healing and/or less formalised forms of ‘care’ were of interest. Therapeutic landscapes are now concerned with more general ‘spaces of care’ (Gesler 2005, 295), and more recent work examines places that are ‘healthy’ or otherwise (Conradson 2005; Wakefield and McMullan 2005), sites of traditional healthcare (Andrews 2004; 2002; Burges Watson et al. 2007), sites of non-traditional healing (Milligan, Gatrell, and Bingley 2004; Wang, Cui, and Xu 2018), and therapeutic capacities of blue and green spaces (Finlay et al. 2015). Where much of health geography examines inequalities between places, therapeutic landscapes focuses on the physicality of place instead (Gastaldo, Andrews, and Khanlou 2004).

More recently, following Gattrell’s (2013) development of therapeutic mobilities there is opportunity to examine the relationship between health and movement between, through and across place and space. Couched in the mobilities turn (see Hannam, Sheller, and Urry 2006; Sheller and Urry 2006; Cresswell 2014), this approach examines how the movements of people, things, practices, and ideas, ‘as well as the emotions and meanings ascribed to such movement [… are] a means to prompt the production or consumption of therapy’(Gatrell 2013, 99). Here it is not just important to question why things move, but how fast, in what rhythms, via what routes, considering how movement feels, and when and how it stops (Cresswell 2010). Responding to the therapeutic landscape focus on the relations between health and place, therapeutic mobilities ‘convey[s] the notion that movement, as well as place, can benefit [or hinder] human health and improve wellbeing*’* (Gatrell 2013, 98).

Much work on therapeutic mobilities examines the everyday practice of walking (Grant et al. 2017; Smith, Treharne, and Tumilty 2017; Yang et al. 2018; Gatrell 2013). Other work has turned to transnational health mobilities, examining how healthcare workers (Roberts and Scheper-Hughes 2011), patients (Chee, Whittaker, and Por 2018; Kaspar, Walton-Roberts, and Bochaton 2019), pharmaceuticals (Bochaton 2018), and data (ANON 2019) become mobile to facilitate and mediate care. There is thus scope to understand the global and local movements of digital health data and devices through a therapeutic mobilities lens. Indeed, mHealth or *mobile* health in particular lends itself to a mobilities approach due to the inherently mobile nature of the technologies used (see also Cinnamon and Ronquillo 2018).

The following reflections centre on a period during the UK’s response to COVID-19 where significant developments were made in the roll out of digital health initiatives (Chung, Xu, and Zhang 2020). My experiences of accessing digital health dovetail with analytical insights from therapeutic landscapes and mobilities. To develop work on the geographies of digital health, I interrogate how digital health diffuses or moves into new spaces, rather than just considering the effects/affects when it has moved. While the home is an important element of my discussion, in part structured by COVID-19 ‘stay at home’ restrictions, I consider disruptions to other spaces of health, examining the complex relations between the digital, health, and space, paying critical attention to how digital health moves.

# Epiphany 1: accessing primary healthcare via the digital

8:15 am Friday 21 August 2020, my bed

I’d been meaning to call my GP[[5]](#footnote-6) all week but was never free before their appointment booking cut-off time. Or at least so I thought. Still in bed, a recorded voice pointed me towards their new online triage system, telling me if I stayed on the phone, I’d answer the same questions as online. I hung up and Googled. My local surgery’s website directed me to an outdated and clunky user interface. Unthinking, I filled out the boxes. Did I want to attach a photo? I flicked to my camera, took and attached a photo, sent off my enquiry, and waited.

Several hours later, an email and text arrived simultaneously: ‘please check your message’. I logged-in, this time on my laptop. A GP had seen my request and had additional questions. I promptly responded and waited. 30 minutes passed, another message, they needed to see me in person. More waiting, more messages, I suggested she called, but this didn’t happen. A frustrating four hours after I first logged my request, an appointment was booked for 5pm…

5:10pm, the GP surgery

There was a prescription, did I want to change my nominated pharmacy[[6]](#footnote-7)? Yes! She updated the electronic record from her computer…

10:20 am Saturday 22 August 2020, my pharmacy

I arrived at my newly nominated pharmacy to no record of my prescription. I opened my NHS App[[7]](#footnote-8), it was showing there. The pharmacist directed me to another part of the App, the nominated pharmacy hadn’t updated. “Not to worry, I’ll call them”. She returned with a puzzled look; they don’t have it either, and no, the information confirming my prescription on the NHS App won’t do. Saturday means my GP is shut. I’m told to call 111, whose automated message promptly tells me to hang-up unless an emergency. I’ve waited most of the week, what’s another two days? I cancelled the call, Googled my GP, logged a new request, and headed home.

My notes show how access to GP services has long been structured by digital health tools. The previous telephone-based telehealth system replaced by a chat-based telehealth service accessible via web or app. I could have stayed on the phone, but only for the receptionist to fill out the online form on my behalf. The entire system is now not just digital, but online. A new therapeutic landscape is formed, that of the ‘clunky’ online chat system. This landscape, however, is not static. It exists in multiple places: my phone, my laptop, my bedroom, my dining table, the pharmacy, and the street. My access to healthcare, however frustrating, is expanded significantly.

This new therapeutic landscape is less bounded by temporal, not just spatial, constraints. While access to my GP surgery remains limited to Monday-Friday 8:15-18:30, I can log a request whenever I please. Having single ownership of multiple devices by which to be notified and log-in, take and send photos, make calls, access the internet, combined with my knowledge, skill and comfort in accessing the online world, affords me an ability to log, albeit not access health anywhere at any time. For the estimated 7.5% of British adults who did not use the internet in 2019 (ONS 2019), many of my digital interactions would not have been possible. Similarly, had I not been working at home in a relatively flexible role, the appointment may not have been arranged for that week. Digital health can thus extend health inequalities, providing better access for some and worse for others.

This new therapeutic landscape also blurs private and public spheres. While it is connecting me to an NHS GP, it is developed and managed by a private company. The company, founded in 2011, has a relative wealth of experience compared to newer firms, although it appears that only one medical doctor is employed. Their Confidentiality Policy states that ‘[p]ractice or patient information […] may be used anonymously for purposes of research and marketing’ (AskmyGP 2017), although their End User Licence Agreement promises they ‘do not use personal information for marketing purposes’ (AskmyGP 2020). It is unclear exactly what is happening to my data, but it is likely being fed into public and private health databases, deemed as valuable when agglomerated to improve algorithmic and AI-driven health interventions (Lupton 2017b). The impossibility to track the mobilities of my data, to see how it moves, is categorised, analysed, and subsequently used to further advance digital health is thus disempowering from a patient perspective. There is also no option to opt out, as a receptionist would have filled out and submitted the form on my behalf otherwise.

Finally, the ability of digital health to delay and disrupt the provision of care is evident. The use of electronic prescriptions, a form of eHealth, actively delayed the receipt of care. Failures in or damage to digital infrastructures, human errors, mismatched systems, and hacking are just some of the reasons digital technologies may fail (Ahmed et al. 2016), exemplifying how digital therapeutic mobilities are imbued with additional frictions and barriers that cause health to stop (see Cresswell 2010). Despite the human actors knowing the prescription existed, frictions in the mobility of my data prevented the receipt of care. This was a distinctly digitally-created issue, an example of where the method of the healthcare interaction actively limited the receipt of care. Although electronic prescribing has proven effects at reducing medical errors in prescribing and reducing prescription-based fraud (Esmaeil Zadeh and Tremblay 2016), ‘unintended consequences’ arise (Ahmed et al. 2016). While impossible to fully trace the cause of delay, it is likely a combination of extensive data security requirements for health data and issues with interoperability between systems (Ahmed et al. 2016). The fact it was a weekend prevented the overriding of the issue, and thus extended the delay in care. The failures in this example mean that the empowerment purported by digital health interventions can instead be deeply disempowering, and indeed stress-invoking. Here, not only does digital health change the spaces and times at which I access care, but it both facilitates and restricts care. This is also evident in the following epiphany.

# Epiphany 2: receiving healthcare via the digital

*6pm Tuesday 25th August 2020, my living room*

The appointment was booked for 6:30pm. Anxious I tried to keep working, keep distracted. I gave up and went for a cigarette. Came back and moved the empty Coke bottles from the sofa, straightened the cushions. I opened my emails and found the Zoom link. I needed another cig, turning on the kettle on my way. At 6:20 I re-entered the living room, a mess, save for the now tidy sofa which I angled the laptop camera towards. I clicked the link and was immediately transported into the cosy, book-filled study of a friendly-looking and sounding Welshman, also waiting. We were both early. That his background included clutter and signs of life was reassuring and many of my anxieties began to fade. I picked up my cuppa...

He began explaining that although not ‘quite the same’ as being proximate, that the video appointment would run in the same way. A passing siren outside my city-centre window cut out his voice and I asked him to repeat something. I found my eyes drawn to his window, rain trickling down, my own was dry. I was instantly reminded of the distance…

When discussing my tendency for domestic disorganisation, I spun my laptop to display the hidden mess. He followed-up by questioning my caffeine-intake, hard to lie now he’d seen the bottles. Before ending the call, he advised of the next steps – more emails. He also suggested a variety of online resources and social media support groups. The call ended and I immediately started Googling.

This describes a telehealth ADHD assessment that usually would have been undertaken face-to-face involving a 12-hour round trip. As the company I chose have no ADHD specialists within 200 miles of my location, without the Zoom option, I would have chosen an alternative, more local appointment, sacrificing quality for ease. Digital health thus expanded my opportunities to access quality healthcare, but this was a private appointment. Free NHS appointments, whether face-to-face or digital had over a year-long waiting list throughout the UK due to years of austerity, compounded by the impacts of COVID-19 (Lindsay 2020). Private providers capitalised on new-found patient acceptance of digital health (Wong and Bandello 2020) to expand their services, alleviating some geographical disparity in the case of private services. Beyond the financial cost of the assessment, additional requirements included access to a device able to handle video, sufficient internet access, and a private space for around two hours. The stretching of therapeutic landscapes of health across geographic space in an encounter that incorporates multiple therapeutic places, including digital ones, is thus in itself exclusionary. For any of the estimated half a million Houses in Multiple Occupation in the UK (Wilson and Cromarty 2019), attending such an appointment may be more difficult. Digital health again widens the health inequality gap. Geographers have long considered how telehealth impacts the spatiality of healthcare, noting that while it can cause disruptions to the spatiality of health and improve access for some, that it largely replicates and reproduces existing patterns of health and access on local (Cutchin 2002) and global (ANON 2019) scales. My experiences here reflect this clearly.

These new therapeutic landscapes – my home/sofa, his home/study, and the interface of Zoom – did however, combine to create a rather successful healthcare encounter. While disruptions are present, as I discuss below, the immediacy of Zoom, in comparison to the GP chat system, made the encounter feel normal (see also Adams‐Hutcheson and Longhurst 2017). In other respects, being at home actively facilitated care as I was able to ‘show’ rather than just ‘tell’ about issues of disorganisation and caffeine addiction, although notably the use of a camera to ‘show’ the GP in the first epiphany was not sufficient. This perhaps reflects findings that telehealth has particular use in mental health settings[[8]](#footnote-9) that rely primarily on talking (Bensink, Hailey, and Wootton 2006). Evidence of the efficacy of telehealth where physical examination is required is more uneven (Reeves, Ayers, and Longhurst 2021).

The digital may have facilitated talking at a distance, but it also caused disruptions. AI functions in Zoom that cut-out background noise to prioritise speech failed with the siren. Zoom’s attempts to recreate bodily sights and sounds, to re-embody or re-present data in ways that resemble bodily forms and functions, requires the compression of data to minimise upload speeds. Zoom converts and breaks down analogue audio and visual data into ‘packages’ which are transported, often across national borders[[9]](#footnote-10), via broadband networks, before being reassembled. Delays, slowing down, speeding-up, and cutting-out of video are all results of frictions in the local and international mobilities of these data packages. As data encounters frictions, the ‘rhythms’ of our interaction, and the subsequent delivery of care, are thus disrupted (see Adams‐Hutcheson and Longhurst 2017).

This account also demonstrates the multifaceted and interconnecting nature of digital health. While ostensibly a telehealth interaction using video software, the delivery of health involved lengthy electronic forms that were emailed, incorporating elements of eHealth. The doctor referred me to online health information sites and recommended I join online support groups, so my digital health interaction did not end with the call[[10]](#footnote-11). Instead, the digital mediated my future access to health information, leading me to join Facebook and Instagram support groups. These informal groups, unaffiliated with formal healthcare organisations, directed me onwards to more digital resources including podcasts, websites, ezines, organisations, eBooks, productivity apps, and even suggestions that accessing the ‘dark web’ could facilitate the procurement of affordable medication. In doing this, my online activities – data – are being commodified by those with access to my online history. I ask myself if my ADHD-oriented digital data is being used to tailor adverts based on my impulsive/ hyperactive or inattentive periods in the same way menstruators’ data was in Healy’s (2020) research. Again, digital health again extends the possibilities of health for some, whilst threatening patient autonomy and control over health interactions. Further threats to patient autonomy are explored in the following epiphany.

# Epiphany 3: practicing self-care via the digital

*11:20 am Monday 1st June, my flat*

It arrived, sleek box, like a smartphone, but smaller. I’d chosen a fitness watch designed by my phone manufacturer so set up was, as promised, simple. Hours later I found myself tying my running laces, excited to try it out…

Monday 15th June, Leazes Park, Newcastle

It wasn’t helping. If anything, it showed me how unfit I was. But the numbers obsessed me. Where’s my fastest stretch? The map in the app on my phone shows the downhill bit, of course. I’ve been running in my local park nine more times in the last two weeks. A personal record, although as my watch and app diligently show me, little progress has been made. I’m walking more too, but again obsessed with the numbers, announcing when we hit each 3km, or the gloried 10,000 steps. I’m annoyed we’re going slowly, I’m just in ‘fitness stage 1’…

*Tuesday 30th June, my living room*

Running hurt my knee so I’ve started online fitness classes in my living room, streaming them from the gym app on my phone to my smart TV. I’m exhausted, out of breath, dripping with sweat, but the watch disagrees - only ‘fitness level 3’ of 5. I take it off…

*Wednesday 18th August, my flat*

*Out of lockdown, I’ve joined a gym and hired a personal trainer. She’s now in charge of recording my progress – ‘oh you look great’, ‘that was ten more than last week’ – and I much prefer her approach to the watch. I don’t even bring it to the gym, none of the PTs wear them. I’m running late for our session but can’t find my phone. Without the gym app, I can’t enter the gym, having forgotten my passcode. I remember the watch has a ‘find my phone’ function, a press of a button and my phone will screech. But where’s the watch? I haven’t seen it in a while. A phone call reveals my missing phone. Problem solved…*

In my reflections on my digital experiences with fitness, it is clear that I engage with multiple therapeutic landscapes: the local park, my walking routes around Newcastle, my living room, the gym, the watch and the associated app on my phone, and my TV. While some of these landscapes are non-digital and relatively standard (the park) my relationship with these spaces is changed through the imposition of the digital. Manufacturers and retailers of Wearable Technology (WT) advertise they can help users achieve fitness goals and increase exercise levels, my watch claiming that ‘[p]rofessional data helps you train better’ (HUAWEI 2020). However, more critical research shows that excessive self-surveillance can become overwhelming and produce negative wellbeing outcomes (Lupton 2017b), or users forget to engage with devices (Shih et al. 2015). My own experiences are clearly about device-induced forgetfulness and the sense that WT was inaccurately reading my biometric data. As Lupton (2017b, 99) reflects, where patient-produced ‘data conflict[s] with their own subjective and phenomenological interpretation of their state of health and wellbeing, this can be unsettling and anxiety- or fear- provoking’. When my feelings of exhaustion were undermined by the numbers and charts, I disengaged with the device. Here, quantification of my therapeutic mobilities, my walks and runs, made them less ‘therapeutic’. Thus, while the digital provided me with vast opportunities to collect and monitor my biometric data, this did not improve my health.

Considering the mobilities of my data, it was collected by the watch, then transferred, via Bluetooth, to the app on my phone, and, according to the terms and conditions I signed was ‘stored within the European Union’. The data collected ranges from personal information including gender and date of birth; my location history; health data that derives stress from my heartrate; device and network information including my IP address; and device and app usage data including how often and for how long I open and engage with the app[[11]](#footnote-12). My non-personal data is used to improve HUAWEI technologies and services, while my personal data is uploaded to the HUAWEI Health cloud and only used for security purposes such as detecting or preventing fraud, or in legal requests (HUAWEI 2020b). It should therefore be secure, and not sent to third parties without ‘my consent’ (McGarry 2018). This marks a change from recent years where manufacturers of fitness watches have been accused of unsafe data practices (Ching and Mahinderjit Singh 2016), but still leaves my data at risk of hacking. Again, a lack of control over the mobility of my data is disempowering.

This example also gives further credence to my argument that addressing digital health requires an appreciation of its interconnected and messy nature (see Figure 1), in which disparate elements interact and combine to facilitate, or prevent healthcare interactions. While ostensibly a reflection on WT, it is the smartphone that is the central player, connecting to WT, TV, providing gym access, and even structuring my choice of which watch to buy. That my phone manufacturer sells its own fitness watches speaks to the attraction of digital health for non-health digital players, and to the commodification, and indeed disposability of digital health technologies (ANON forthcoming). While this example also points to my privilege in accessing digital health technologies, compared with the other examples, digital access was less necessary. I could run and exercise without technology and can register and access the gym without the use of digital devices. Instead, this speaks to not just my comfort with, but increasing reliance on, digital technologies to navigate my daily life.

# Conclusions

These three epiphanies demonstrate that digital health disrupts the established spatiality of health. My healthcare, delivered in and through new therapeutic landscapes via new therapeutic mobilities reveals that digital health is a spatial artefact that, as with the digital more broadly, reshapes existing geographies, ‘and itself has many geographies’ (Ash, Kitchin, and Leszczynski 2018, 5). While there are nuances in the ways that the digital influenced my experiences of health, it is possible to draw five wider conclusions from the epiphanies. This brings further impetus to developing a broader understanding of the geographies of digital health.

1. Digital health interventions tend not to work in isolation. Instead, multiple devices and systems work together to facilitate the delivery and consumption of health. Research can only understand specific interventions within an appreciation of their interconnected nature.
2. Although COVID-19 was the reason some activities went online, there is clear evidence that access to health in the UK was already increasingly structured by digital technologies. While non-digital options may exist, they may be more difficult, time-consuming, and increasingly secondary to digital options. This has significant implications for those with barriers in accessing digital devices and the Internet.
3. Access is much more complex than ownership of devices. There are issues of access to digital devices throughout the working day, issues of access to private space within the home, and financial costs associated with accessing devices, the internet, and paid-for care/fitness. Digital capability and comfortability are also important to consider. Digital health both facilitates and restricts access to health.
4. Digital health interventions disrupt and create therapeutic landscapes of health. Whether by moving health into home and workspaces, or WT and mHealth changing our experiences in place. We need to further examine the formation of new digital therapeutic landscapes – apps, forums, groups, websites, etc. to understand the new ways health is being produced and consumed.
5. Digital health interventions disrupt therapeutic mobilities by circumventing distance and the need for co-presence. But reliance on the digital mobility of data imbues this mobility with frictions and stoppages. Furthermore, it becomes increasingly difficult to track the transnational movements of health data, which is disempowering for patients.

Moving forwards, we need expand discussion on the spatial dimensions of distanced and digitalised health. This requires further attention to the spaces, places, and movements of digital health. it also requires further methodological approaches. Here, the autoethnographic approach has brought attention to how digital health is experienced and lived, but there is further scope to understand how various groups of patients and practitioners are experiencing health. Additionally, while the consumption of digital health has formed the basis of discussion here, there are certainly many more issues to be addressed, not least, further examination of the ways that neoliberal agendas articulated via digital health are felt and experienced. Other questions may concern the dynamic geopolitics of health data. With the UK leaving the European Union, the future of data collected by my fitness watch, for example, is uncertain. There is also scope to analyse the global production networks involved in the production of digital health technologies and the ill-health effects that the production and disposal of digital goods and the maintenance of data centres produces (Belkhir and Elmeligi 2018). COVID-19 has accelerated the already expanding reach of digital health, and while not all recent interventions will last, many will. There is an urgent need to examine the multiple ways digital health impacts and is impacted by spaces and places. To further examine the geographies of digital health, and to suggest ways that new digital therapeutic landscapes may empower rather than disempower patients. To do so, the digital must become an essential component of health geography research.

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1. See (Butz and Besio 2009; Ellis, Adams, and Bochner 2011; Liggins, Kearns, and Adams 2013) for overviews of the various traditions. [↑](#footnote-ref-2)
2. Thanks to Reviewer 1 for suggesting the term ‘comfortable’. [↑](#footnote-ref-3)
3. Within digital geographies the opposite is true, although researchers are gradually moving towards discussions of care with the digital (see Bonner-Thompson and McDowell 2020). [↑](#footnote-ref-4)
4. Gesler, in travelling to Lourdes to undertake a pilgrimage, effectively evoked autoethnographic methods (Kearns 1997). [↑](#footnote-ref-5)
5. General Practitioner – the normal point of access for primary healthcare in the UK. GPs are Medical Doctors and are in ‘surgeries’, small institutions based within local areas. [↑](#footnote-ref-6)
6. Electronic prescriptions are sent to a pharmacy of the patient’s choice. [↑](#footnote-ref-7)
7. An app released in 2019 that allows NHS patients to view their health record and complete certain tasks such as ordering repeat prescriptions, and where GP surgeries have the option, to book and manage appointments (NHS 2020). [↑](#footnote-ref-8)
8. ADHD is recognised in the Diagnostic and Statistical Manual of Medical Disorders, 5th edition, and many forms of treatment and assessment overlap with mental health services more broadly. [↑](#footnote-ref-9)
9. Zoom faced significant backlash about its data policies and made significant changes in April 2020. Nonetheless, at the time of the appointment, there was no end-to-end encryption, and data could be transferred within the data region of ‘Europe’ (Wagenseil 2020). [↑](#footnote-ref-10)
10. Shifts towards the self-management of health are contentious and beyond the scope of this paper (see for example Lupton 2013; Mathieu-Fritz and Guillot 2017), but as a researcher with interests in health, I have the skillset to make relatively informed digital health choices, which is not true for all patients (O’Connor et al. 2016). [↑](#footnote-ref-11)
11. Discussions concerning the ethical implications of health data collection are extensive, although largely show that data collection does not deter consumers, and in the case of fitness, more extensive data collection can be a selling point (Pingo and Narayan 2018). [↑](#footnote-ref-12)