

**The temporalities of tracking sitting time: An
exploration of the influence of rhythms and
biographies on behavioural change in chronically ill
adults and office workers**

by

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*To my parents, Wayne and Helena Weedon,
and my other half Gavin Vella,
without whom I would not be who or where I am today.*

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ABSTRACT

This thesis explores how older adults with chronic obstructive pulmonary disease (COPD), and office workers, experienced sitting while wearing a self-tracking device that prompted them to break up and reduce their sitting time.

My thesis draws on public health and social science research on self-tracking, as well as the temporality and rhythms literature, and I argue that sitting can be understood in relation to the wider social, personal, biographical and institutional contexts to which my participants related their experiences of the past, present and future, and their changing habitual routines.

Findings were based on two studies, the motivations behind which were to encourage participants to reduce their sitting and to deduce whether wearing a self-tracking device would inspire them to do so. The first study was a qualitative nested study which was part of a multidisciplinary randomised control trial. This study investigated the feasibility of self-tracking and an educational booklet created to reduce sitting in older adults with COPD. The qualitative nested study interviewed 25 patients with COPD, both before and after the study, and the first interviews explored the contexts of their lives and sitting, while the second explored how they managed with the device, educational advice and the study as a whole.

The second study interviewed 24 office workers about their experiences with a self-tracking device designed to reduce their sitting. Each participant was interviewed both before and after the two-week study period – in interview 1, I explored their lives, their work and their experiences and associations with sitting, and in interview 2 I investigated their experiences with the device and the study as a whole.

My four analytic chapters answer the following four questions: how do patients with chronic

obstructive pulmonary disease (COPD), and office workers, use a device to self-track their sitting time? What kinds of meanings do patients with COPD and office workers attach to sitting? How do personal and social or institutional temporalities of the past and present, and the rhythms of everyday life, shape participants' sitting and self-tracking? And what does the conceptual framework, focusing on meanings, temporalities and rhythms, add to our understanding of health, sitting and self-tracking?

The findings of this thesis revealed that the meaning of sitting was different for my two participant groups, in that they were influenced heavily by their experiences with their past, present and future, as well as their daily routines and changes in pace. Therefore, in order to make sense of how these participants understood the meanings of sitting, I adopted a temporality and rhythms framework, which allowed me to make sense of how COPD participants either looked back on their previous lives and reminisced on happy memories, whereby they were mournful and sad about their current lives and changing behaviour, and sitting less was not important to them, or looked toward their futures in anticipation of a healthier life and the ability to do more. The concept of rhythms allowed me to make sense of how some of these participants felt that the self-tracking device and sitting interrupted or did not fit in with their lives and how they often felt that sitting had positive benefits, or where their existing rhythms had been interrupted by their illness and this prevented behavioural change and a reduction in sitting. The concept of rhythms also helped to make sense of those participants who adopted their existing habitual rhythms to encompass sitting less and self-tracking, or those who engaged when their habitual routines coincided with sitting less and self-tracking.

In contrast, office workers' sitting and self-tracking were related to the workplace, in that they looked back on previous work times when they would make time for their health and take breaks, thus the concept of temporality helped to make sense of this biographical and

institutionally dictated time. The concept of rhythms helped to decipher how these participants did not have an issue with health but associated any negative well-being consequences to their increasingly fast-paced and stressful work lives. In addition, their free time was not considered problematic, and so they did not feel the need to change their behaviour or reduce their sitting or self-tracking during this time, as they saw it as an opportunity to gain some form of freedom and do what they wanted to do. Therefore the concept of rhythms provided a way of understanding the different routines of work and home and how the pace of these rhythms differed in speed and intensity.

The thesis provides a new perspective on exploring sitting and highlights the importance of exploring both it and self-tracking in relation to the experiences of biographical time (past, present and future) and changing routines. I offer insights into how, by adopting a rhythms and temporality framework, we can make sense of people's experiences of reducing sitting and engaging with self-tracking in order to do so. The thesis brings together literature on public health, self-tracking and place and time, and it argues that by studying the meaning of sitting and adopting a temporality and rhythms framework, the complexity and experience of time and its relationship with chronic illness and work are illuminated, thereby highlighting how time, place and pace are fundamental in understanding sitting and self-tracking.

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CHAPTER 1 INTRODUCTION

This thesis has its origins in an interdisciplinary collaboration between the Department of Social Science and the School of Sport, Exercise and Health Sciences. The impetus from the School of Sport, Exercise and Health Sciences was to encourage individuals with chronic obstructive pulmonary disease (COPD) to reduce their sedentary behaviour and explore whether wearing a self-tracking device (LUMO) would encourage them to do so. The motivation for this study comes from public health research, which argues that we should reduce our sitting in order to avoid detrimental health issues (Owen, Healy, Matthews, & Dunstan, 2010), and literature which argues that reducing sitting may be more beneficial for COPD patients than exercise programmes (Cavalheri, Straker, Gucciardi, Gardiner, & Hill, 2016; Hill, Gardiner, Cavalheri, Jenkins, & Healy, 2015).

In light of these hypotheses, I collaborated on a randomised controlled trial with this department, and we designed, conducted and reported on a two-week intervention to encourage hospitalised COPD patients to sit less often. This project was a feasibility trial interested in reducing sitting by using an educational booklet, containing top tips to sit less often, and a waist-worn self-tracking device that encouraged participants to stand up and gave them feedback on their sitting and standing. My role as a qualitative researcher involved interviewing these patients before and after the intervention, to explore their understanding of sitting and how they got on with the educational booklet, the self-tracker and intervention as a whole.

Following this study, I devised a second study, which encouraged office workers to reduce their sedentary behaviour by using the same self-tracking device. This study asked office workers from a local council to wear a self-tracking device to reduce their sitting time. I interviewed the participants before wearing the self-tracker and then thereafter.

Initially, I considered adopting the social construction of technology framework (SCOT), in order to help understand the two participant groups' adoption or domestication of the technology (Klein & Kleinman, 2002). However, my research shifted its focus to the meanings of sitting and self-tracking and temporality and rhythms, as this seemed more appropriate for examining the ways in which the participants discussed their experiences of sitting, their use of self-tracking and a reduction in sitting.

As a consequence, the main, overarching question this research seeks to address is how older adults with COPD and office workers use a device to self-track their sitting time. I contend that their meanings of sitting are rooted deeply in their biographical, personal and institutional life contexts which have shaped their engagement with sitting less and self-tracking.

This thesis draws on and contributes to four different strands of the literature: public health, social science relating to self-tracking, meanings and finally rhythms and temporality. These elements are brought together to discuss the two participant groups' understanding of health, sitting and self-tracking.

My thesis originates from public health research which argues that sitting too much has negative health effects. It views sitting as problematic, and so a change is required by addressing health interventions, including self-tracking (Dunstan et al., 2012). As a consequence, interventions and health initiatives have tried to change behaviour and encourage people to sit less often (Greenwood-Hickman, Renz, & Rosenberg, 2016; Matei et al., 2015). However, other public health scholars have argued that sitting has salutogenic effects for some population groups, for example older adults. Other scholars have explored the perceptions of sitting; for instance, Mcewan, Tam-Seto, & Dogra (2016) explored the definitions, and disadvantages and advantages of sitting in older adults, arguing that it was perceived as beneficial for social and cognitive reasons, as it often provided routine and could

be considered meaningful. The participants, however, also acknowledged that sitting was disadvantageous for health reasons.

This public health literature informed my thesis by providing categories of sitting in terms of what makes people sit, and it allowed me to establish what sitting means to my participants beyond the immediate context of health. In addition, given the severity of the COPD participants, this literature helped to understand sitting in the context of older adults and chronic illness.

The two studies highlighted how sitting is viewed in relation to other relevant issues that affect it. For the older adults with COPD, this mainly entailed their illness, which influenced their ability to reduce sitting and engage with the tracking device given to them. For other COPD participants, it highlighted how sitting provided positive meanings or benefits. In contrast, the office workers study highlighted the institutional impingements that prevented sitting less and self-tracking use, as they emphasised the workplace as problematic in this regard. Thus, in both cases, reducing sitting and self-tracking was influenced by experiences of time, pace and place.

I consult the social science literature on self-tracking to understand the office participants' critical engagements with the self-tracker, as the device was rejected during their free time because they felt that a self-surveillance tool was inappropriate in their homes. I refer to Lupton (2012, 2013a, 2014c, 2014b, 2014a), Moore (2015) and Till (2014) to understand the critical literature on self-tracking, whereby it is argued that self-tracking engages us in panopticism, surveillance and healthism. In addition, I consult the social science literature to examine the positive accounts of self-tracking. This literature investigates the creative and ordinary use of self-tracking devices by office participants documenting their sitting. The device in this instance is used to document the workplace sitting in which they engage and to underline how the place of work makes reducing sitting difficult. Therefore, I consult

literature such as Rooksby, Rost, Morrison, & Chalmers (2014), who argue that individuals use self-trackers to “find meaning in their everyday lives.”

Studying these two participant groups revealed that their experiences and meanings attached to sitting and self-tracking were influenced by their chronic health or their workplace. Their understanding of sitting was influenced by their broader biographical past, present and future and their changing routines, which shaped their lives and their ability to reduce sitting and instead self-track. I consulted the literature on rhythms and temporality in order to make sense of these experiences. These two concepts are brought together to help understand the complexity of time, and it has been argued that in order to understand better the connections between time and health, we must appreciate “all expressions of rhythmicity, periodicity, temporality, tempo, timing, orientation in time and relation to time” (Adam p51). I adopt the same approach to determining the connection between time and place, in order to understand the office participants and their sitting and self-tracking use. I argue that these concepts help to uncover the relationship between their experiences of time and the rhythms of their everyday lives related to health and place. Temporality helps to explore experiences with time and the ways in which illness or work have an influence, while rhythms help to look at time through the everyday life habits and routines dictated by pace and place.

The literature therefore argues that time is an integral part of our lives and relates to “ageing and the life-span and time passing and coping with things to be done in a day” (Adam, 1995, p3). For the older adults with COPD, this related to reflecting back on better and healthier days, or their anticipation of a better and healthier future. This affected their ability to sit less often and to use the device that was given to them. In contrast, the office participants also drew on biographical temporality and how their former work lives were less stressful than their current roles. Therefore, I refer to the concept of temporality to make sense of their experiences with time, which are shaped by the contexts of their personal lives (Sharma,

2014), and argue that these two participant groups' experiences with time are embedded in their biographical past, present and futures. In addition to temporality, I employ the concept of rhythms, which Adam (1995) argues is involved in the process of thinking about time. The concept of rhythms helped to make sense of the COPD participants, who either changed their rhythms to allow for sitting less and tracking use, or reacted to the tracker and got up if they considered it meaningful, or whose lives were fragmented by biological rhythms and tracking, and sitting less was not important to them. In addition, I use this concept to make sense of those office participants whose rhythms and the speed and intensity thereof differed, depending on if they were at work or home. Thus, the concept of rhythms is adopted to discuss how sitting is enacted within numerous daily routines (Phoenix & Bell, 2018) and to determine how changing rhythms shape participants' sitting and self-tracking.

This literature on rhythms and temporality therefore helps to define the participants' contexts and how they view sitting, and how this in turn shapes their use of the self-tracking device and their reduction of sitting. Moreover, it demonstrates how the participants' meanings of sitting are related to place, time and health.

Through this thesis, I wish to advance knowledge on sitting and provide an understanding of how the experiences of time, pace and place influence this and self-tracking. As such, I argue that sitting less is not an isolated event, but is comprised rather within multiple rhythms and temporalities that shape individuals' engagement with sitting less.

I contribute to existing public health literature by continuing research into categories of sitting and what makes people sit. Whilst I take a different approach to existing work, in that I focus on exploring the context and meanings of sitting, I use the existing public health literature, which looks for correlations, barriers and facilitators to sitting, and the perceptions and salutogenic effects thereof to help provide insights into my own work on the subject. This thesis therefore provides a conceptual framework for understanding and analysing this topic,

with a focus on biographical and institutional temporality and the daily rhythms of everyday life, illuminating as a result, how behavioural change is influenced by time, pace and place.

1.1 AIMS AND OBJECTIVES

Against this backdrop, this thesis investigated the use of a self-tracking device to reduce sitting in two highly sedentary participant groups. Furthermore, it looked at the following research questions:

1. How do patients with chronic obstructive pulmonary disease (COPD), and office workers, use a device to self-track their sitting time?
2. What meanings do patients with COPD and office workers associate with sitting?
3. How do personal and social or institutional temporalities of the past and present, and the rhythms of everyday life, shape participants' sitting and self-tracking?
4. What does the conceptual framework focusing on meanings, temporalities and rhythms add to our understanding of health, sitting and self-tracking?

I adopt a qualitative interpretivist approach to answer these questions, seeking to gain an in-depth understanding of what sitting means to my participants in a way which allows them to have freedom to discuss their lived experiences with me. Existing research exploring sitting makes broad claims on the practice and argues that it is detrimental to our health, is associated with numerous health indicators or has salutogenic properties. Herein, I look beyond health in order to understand sitting in terms of the personal, social and institutional lives of my participants.

1.2 STRUCTURE OF THE THESIS

I begin the thesis with a literature review (Chapter 2), which outlines four threads related to this thesis: public health, social science in relation to self-tracking, meanings and finally rhythms and temporality. These elements provide a backdrop to this thesis and pave the way for my research. The public health literature provided me with an understanding of the health-enhancing views of sitting too much and decreasing sitting time across various population groups, where self-tracking later interjects to aid in reducing sitting. Next, the social science literature on self-tracking offers both a critical perspective on self-tracking, which highlights it as a way of attaching us to panopticism and self-surveillance, and creative and original uses of self-tracking, which argue that it helps individuals find meaning in their lives. Next, I discuss literature which explores the experiences and meanings of illness, self-tracking and place. I use this work to illuminate the usefulness of adopting a qualitative interpretivist methodology that helps capture the lived realities and experiences of individuals. Finally, I provide an overview of the framework on rhythms and temporality, highlighting the usefulness of adopting this framework for this thesis, in order to explore the experiences of sitting and self-tracking in both COPD and office participants.

I follow this with an overview of the methodological approach I adopted in my research (Chapter 3) and discuss the two empirical studies in terms of recruitment, data collection and interpretation.

I then move on to my four analytical chapters, the first of which (Chapter 4) answers the research question surrounding the meaning of sitting and explores how older adults with COPD make sense of this inactive position. The findings are based on the first interview conducted as part of the interdisciplinary study, which sought to gather information about the participants' lives, their illnesses, sitting and study expectations. I build on existing literature

which argues that categories of sitting exist, and some of these have detrimental health effects while others have salutogenic impacts (Kikuchi et al. 2014; O’Neil & Dogra, 2016). In addition, I examine studies that discuss the important role some sedentary activities play in the lives of elderly people (Mcewan et al., 2016), before moving on to discuss three meanings associated with sitting. First, I discuss participants whose sitting was associated with enabling them to live normally and independently, and sitting provided them with the ability to rest in-between chores and activities. Second, I discuss participants who sat for satisfaction and enjoyment, and whose meaning of sitting was associated with positive benefits, including relaxation and better cognitive performance. Lastly, I discuss participants whose meaning of sitting highlighted the severity of their illness and experienced it as a mournful and sad activity which reminded them of better and happier times gone. I bring these meanings of sitting together to argue that by exploring them we are able to explore the complexity of issues surrounding them, which for this participant group resonated around their illness and the way in which they considered sitting as valuable to them. This in turn shaped their meaning of sitting and the use of the self-tracking device to reduce it accordingly.

Chapter 5 explores how the meanings attached to sitting by older adults with COPD varied in relation to time and how their lives were influenced by the broader biographical temporality of the past, present and future. Following on from Chapter 4, I look at how the meaning of sitting shaped participants’ sitting and self-tracking use. I consult the literature on rhythms and temporality to make sense of the participants’ experiences of time. I also discuss how the act of self-tracking sitting altered the rhythms for these participants, in that the self-tracker interrupted their habitual routines. I contend that this interruption caused many to disengage with the device because of the severity of their illness, whilst for others it encouraged them to create new rhythms. I also deliberate on how some of the participants looked back on days

when they were able to move at a faster pace, and others who looked forward to a healthier future. I argue that the participants' experiences of sitting and self-tracking were affected by their biographical temporalities of the past, present and future and a change to their rhythms as a result of their illness, which in turn influenced behavioural change.

In Chapter 6, I move on to discuss the second study, and look at office workers' connotations and experiences of sitting. They had different views depending on whether they discussed home or work. Recent budget cuts and redundancies have had an adverse effect on how often these people sit down, causing their rhythms to speed up. In contrast, their rhythms at home slowed in pace and are much more relaxed. I therefore argue that their meaning of sitting could be associated with place, since rhythms and the speed and intensity of these differed depending upon home or work.

The final empirical chapter (Chapter 7) continues to discuss the office workers but with a focus on their use of the self-tracking device to reduce sitting. The participants not only used the device to learn about sitting and to document their practices in this regard, but they also used it to critique how work prevented them from using the device to its full capacity. I discuss how they did not want to use the device in their free time, as they considered it a surveillance tool and were critical of the workplace as a location in which they were not allowed to sit less often. I therefore argue that the participants' experience with time was spatial and impinged by an institutional temporality which altered their engagement with the self-tracking device, as it dictated their experience with time.

I conclude this thesis in Chapter 8 and provide a summary of the findings from the four analytical chapters by evaluating my research questions. I discuss how my thesis provides an original perspective from which to explore sitting that highlights the importance of the experience of time, place and pace in two participant groups. I demonstrate how focusing on

the concepts of meaning, temporality and rhythms allows an investigation into how the experiences of time, biographically in terms of the past, present and future, institutionally whereby clock time dictates working lives and the changing rhythms of everyday life which are influenced by pace and place, influence if and when the participants engaged with reducing their sitting and getting involved in self-tracking use. I discuss how my thesis combines the literature on public health, social science-based self-tracking and rhythms and temporality, and I argue that it provides a novel approach to exploring sitting which offers insights into the complexity of time and how the experiences of time, place and pace influence health and behavioural change.

2.1 INTRODUCTION

This thesis explores experiences of self-tracking and the self-tracking of sedentary behaviour, drawing on and contributing to four distinct lines of inquiry: (i) the public health perspective on sitting, (ii) critical social science research on self-tracking, (iii) interpretivist approaches to understanding experiences and meanings and iv) literature on rhythms and temporality. This chapter will discuss these four approaches and outline how this thesis utilises and contributes to each element.

The thesis originates from public health research. The original aim of my work was concerned with reducing sitting by using a self-tracking device. During the research, it became evident that sitting had different meanings for both participant groups and that this influenced their use of the self-tracking device and how they reduced this practice. I continued down this path but with a focus on how my participants' meanings of sitting affected their sitting and self-tracking use. I employ the self-tracking literature to make sense of how the office workers in this study were both critical of the self-tracking device and disengaged with it during their free time, and yet they creatively used it to document sitting in the workplace. When conceptualising the literature and focusing on meanings, it became apparent that the participants' meanings varied in relation to their time, pace and place. Therefore, I use the conceptual framework of rhythms and temporality in order to make sense of this issue.

The four strands of literature discussed next address sitting and self-tracking from different perspectives. Public health literature highlights four different arguments. First, it defines sedentary behaviour as a health problem for which a change in behaviour is required, using interventions and self-tracking, the latter of which is often considered a positive

reinforcement for reducing sitting and is often used in intervention studies (Tabak, op den Akker, & Hermens, 2014), including the feasibility study that we conducted. The argument that sitting is detrimental to our health (Dunstan, Howard, Healy, & Owen, 2012; Owen et al., 2010) has resulted in numerous studies examining the determinants and facilitators of sedentary behaviour, as associations are made between health issues and sitting (Greenwood-Hickman, Renz, & Rosenberg, 2016; Nang et al., 2013). Third, the literature has explored the positive effects of sitting, as it has been argued to have salutogenic effects on some population groups, for example older adults (Chastin, Schwarz, & Skelton, 2013; Kikuchi et al., 2014). Lastly, perceptions of sitting have been investigated by asking individuals about their understanding of the topic (Mcewan et al., 2016). These four arguments present different views on sitting and contribute to my thesis by highlighting how reducing it is often difficult. Therefore, exploring this subject may help to provide a better understanding of the issues surrounding it, which I seek to do by exploring the meanings participants associate with sitting, thereby offering an in-depth understanding of sitting in relation to the participants and their lives.

The second strand of the literature looks at self-tracking. I discuss the critical social science perspective on this topic and argue that digital technology turns us into “panoptical selves” (Lupton, 2012, 2013d, 2014a, 2014b; Till, 2014), in that self-tracking constitutes an exercise of power over those who engage in self-surveillance, whereby our lives become open and visible. In addition, I discuss positive arguments on self-tracking, which argue that it can be used creatively to document our lives or create alternative health practices (Rooksby, Rost, Morrison, & Chalmers, 2014). This body of literature is consulted to make sense of the office workers who engaged with the self-tracking device during work time, in order to document the amount of seated work imposed upon them.

Third, I will discuss studies that take an interpretivist perspective and focus on meanings of sitting (Marx et al., 2016), to help understand the importance of exploring meanings, which upon comparing my two groups of participants indicated that sitting has many different meanings for individuals, each of which can influence their use of the self-tracking device and their reduced sitting time. This aspect of the literature therefore explores how focusing on the lived realities of individuals is useful, in order to understand people and their actions without changing them, as the interest lies in the experiences or meanings they give to what they do.

When conceptualising my two participant groups, it became apparent that the meanings they assigned to sitting were related to time and place and that this influenced their engagement with sitting less and self-tracking. Therefore, I draw on the conceptual framework of rhythms and temporality, which helps to make sense of how the participants' sitting was related to the biographical temporality of their past, present and futures, the institutional temporality of the workplace and changes in the pace and rhythms of their daily lives.

In what follows, I discuss in more depth these four constituents of the literature and their relationship with the current thesis.

2.2 THE PUBLIC HEALTH PERSPECTIVE

2.2.1 REDUCING SITTING

The public health literature defines sedentary behaviour as “any sitting behaviour characterised by an energy expenditure of ≤ 1.5 METS (metabolic equivalents) while in a sitting, reclining or lying position” (Tremblay, Aubert, Barnes, Saunders, Carson, Latimer-Cheung, Chastin, Wondergem, et al., 2017). In recent years, sedentary behaviour has been associated adversely with health outcomes, such as type 2 diabetes, cardio-metabolic risk

biomarkers and premature mortality (Dunstan et al., 2012; Owen et al., 2010; Tremblay, Aubert, Barnes, Saunders, Carson, Latimer-Cheung, Chastin, Wondergem, et al., 2017). Research has focused on sedentary behaviour in the context of watching television, playing video games, driving and workplace sitting, as well as in the context of chronic illnesses. This literature considers time spent in a sedentary position as being distinctive from time engaging in physical activity (Dunstan et al., 2012), and it highlights the benefits of decreasing sitting and the health effects present in sitting too much. I move on to discuss scholars who categorise different sitting activities and make associations between their and health outcomes.

2.2.2 BARRIERS AND FACILITATORS TO REDUCING SITTING

This part of the literature focuses on evaluating the associations between sedentary behaviour and health. For example, Nang et al. (2013) examined the relationship between sitting for screen time, computer use and reading, and cardio metabolic biomarkers (e.g. blood pressure, lipids, glucose), finding that longer screen time was related to a worse level of various cardio-metabolic risk factors.

As a consequence of the ‘sit less’ movement, interventions and health initiatives have tried to encourage people to sit less often by seeking to understand better the determinants and acceptability of sitting. This is evident in older adults (Greenwood-Hickman, Renz, & Rosenberg, 2016; Matei et al. 2015), who the NHS have categorised as “the most sedentary population group,” thus making them a prime target group for studies in sedentary behaviour (NHS, 2014). Studies with older adults and sitting have suggested that this cohort needs to adopt and maintain a more active lifestyle, in order to promote healthy aging. Their higher levels of sedentary activity make them a higher risk of developing a health issue, due to too little exercise. A wealth of research has explored this subject, including Greenwood-

Hickman, Renz, & Rosenberg (2016), Matei et al. (2015), Palmer et al. (2018) and White et al. (2017), who have explored the barriers to and facilitators of reducing sedentary behaviour in older adults, establishing the most common barriers as health issues, enjoying sitting activities, having a lack of time and being fatigued. Whilst no significant reduction in sedentary behaviour was evident, participants often reported adopting new habits such as carrying shopping bags. Barriers and facilitators to sitting in older adults with COPD have also been explored. For example, Thorpe, Kumar, & Johnston (2014) found that the main barriers to sitting in this chronic population group were their illness and symptoms of breathlessness and fatigue, which prevented them from getting up and reducing their time sat down. These barriers are important to consider, given that individuals with COPD are a target population group in this thesis.

Health interventions have also harnessed the use of self-tracking to encourage sitting less, as healthcare is increasingly espousing self-management as a means of cutting costs and encouraging control of our own health.

Self-tracking is considered beneficial in promoting behavioural change and helping to engage individuals in the self-management of their health. It assists in engagement and personalised care (Chiauzzi, Rodarte, & Das Mahapatra, 2015), in that such devices allow for goal-setting, social support, rewards and real-time feedback and motivation, all of which enhance personal health through surveillance (p2).

Several studies exploring self-tracking in healthcare have argued that participants often report mixed responses to using them. For example, Gucciardi et al. (2013)'s participants were divided between those who felt that self-tracking blood glucose was a useful tool for their general diabetes management, and others who felt they could gauge their blood sugar equally as well without it, and often felt emotional distress when the data did not align with how they felt. Similar findings were reported by Sugden et al. (2008), who found that older women did

not statistically increase their daily steps using a device given to them. However, many studies have also reported that participants do indeed receive benefits from self-tracking which do not entail statistical increases in activity, such as sleeping better, feeling better in themselves and feeling healthier. Therefore, self-tracking often facilitates participants to feel better, even if statistical evidence does not support this notion (Nafus & Sherman, 2014; Sugden et al. 2008).

These studies therefore demonstrate how self-tracking can assist in the modification of people's behaviour, which is what the original aims of my research were in regards to sedentary behaviour. However, for many of the participants in the discussed studies, the self-tracking device did not necessarily facilitate a visual change in behaviour but rather provided them with benefits such as better sleeping patterns. Whilst this thesis does not study associations between sitting in the way in which these studies on barriers and facilitators do, these self-tracking studies are useful for my studies and for understanding my participants, who also discussed the benefits of the self-tracker given to them not necessarily equating to sitting less often.

In the same way that elderly adults are considered an important target group for sedentary behaviour studies, the workplace has also been recognised as a priority setting in this regard, given that office workers spend the majority of their working day sitting (Grunseit, Chau, Van der Ploeg, & Bauman, 2013; NHS, 2014).

Self-tracking has also been considered a potentially effective support for these individuals. Ryan, Grant, Dall, & Granat (2011), for instance, encouraged office workers to break up their sitting every 30 minutes, with 18% of participants achieving this goal at on least one day over the period of the study; however, the majority of participants went over this recommended amount. Similarly, Guitar, MacDougall, Connelly, & Knight (2017) highlighted how the device given to their participants was considered useful for monitoring and collecting data on

sitting, but it did not decrease the actual practice.

These studies contend that sitting less is often difficult to do and contains numerous associated barriers, such as illness, symptoms and the workplace. In addition, they explain what makes people sit, as activities detrimental to sitting are considered just as bad. However, many of these so-called bad activities were considered valuable and salutogenic to their lives by my COPD participants, and so in order to help reduce sitting and understand these barriers in individuals, more context is needed to provide insights into the complexity of their issues. This will be discussed in the following section, in which different health effects and types of sedentary behaviour are clarified.

I now move on to discuss the positive effects of sitting that help me to understand COPD participants, whose sitting was often described as valuable and beneficial to their lives, and the perceptions of sitting, which highlight the usefulness of exploring participant views.

2.2.3 POSITIVE HEALTH EFFECTS AND PERCEPTIONS OF SITTING

Some public health research argues that sitting often has salutogenic effects for some population groups (Chastin, Schwarz, & Skelton, 2013; Kikuchi et al., 2014; O'Neil & Dogra, 2016).

For example, O'Neil & Dogra (2016) evaluate the association between different sedentary activities and self-reported wellness in middle-aged and older adults, emphasising the positive benefits sitting can have on these participants; for example, they found that several activities including crosswords, puzzles, listening to music and playing an instrument were associated with positive psychological wellness. Similarly, Chastin et al. (2013) classify sitting and acknowledge differences based on the context thereof, for example the domain in which it occurs. They argue, therefore, that the detrimental effects of sitting are dependent on, for example, what the sitting activity is and where it takes place. This has also been observed

by Kikuchi et al. (2014), who argue that different categories of sitting, namely active and passive, can be associated with different health benefits. Passive sitting includes activities such as watching TV, and active sitting includes activities such as doing puzzles. The participants in their study who were more passive were associated with higher odds of being overweight. They argued that active sitting played a different role mentally and physically for their participants, as it stimulated them and provided them with important cognitive performance.

These studies adopt a different methodological approach to this thesis, using surveys to quantify sitting categories and uncover patterns between these and health-related issues. This quantitative approach measures associations between different types of sitting, for example Kikuchi et al. (2014)'s categories of active and passive sitting and their relationship with BMI and psychological wellness. Whilst these studies therefore highlight the associations between health and positive and negative types of sitting, a qualitative approach could help provide a more in-depth discussion, which in turn could help to examine the context of sitting and assist in reducing the practice in individuals.

A small number of qualitative studies on older adults and sitting exist which explore understandings and perceptions (Chastin, Fitzpatrick, Andrews, & DiCroce, 2014; Mcewan, Tam-Seto, & Dogra, 2016; Palmer et al., 2018). Perception can be referred to as “the way that you think about something or the impression you have of it” (Collins English Dictionary, 2018). Palmer et al. (2018) discuss the cognitive benefits of ‘busy sitting’, which include doing things with other people and cognitively beneficial activities, in comparison with non-busy sitting, which includes non-purposeful or ‘passive’ sitting activities that are not considered as valuable. Similarly to Mcewan, Tam-Seto, & Dogra (2016), who investigated perceptions including the pros, cons and barriers of sitting in older adults, Palmer et al. (2018) asked older adults about their sitting and non-sitting activities and their perceptions in

this regard. Both Palmer et al. (2018) and Mcewan, Tam-Seto, & Dogra (2016) report that sitting entailed negative connotations, for example a lack of movement or providing little benefit, and positive connotations, including social benefits when eating out and socialising with friends, and cognitive benefits from doing puzzles and computer use. Mcewan, Tam-Seto, & Dogra (2016) suggested how the concept of routine was important for their participants, as they felt that some activities helped them get out of bed in the morning, even if they did involve sitting. Palmer et al. (2018) highlighted how meaningfulness was important to their participants, who considered being busy of high value and made distinctions between sitting for a purpose and not doing so.

This body of literature highlights how individuals experience sitting in their daily lives, and why they sit, by exploring the context of their lives. These studies have highlighted how older adults perceive sitting in the context of their lives. The meaning of sitting explored in this thesis differs slightly to the perception studies, as the impetus of meaning is to appreciate what people say, in order to understand their lives and to provide an in-depth understanding of lived experiences.

2.2.4 SUMMARY

The studies discussed in this section have illustrated the public health perspective on sitting and self-tracking. This literature frames sitting as a problematic activity wherein a change in behaviour is required in order to avoid detrimental health effects. Self-tracking is used to aid in decreasing sedentary behaviours. The qualitative studies have also explored facilitators and barriers to sitting which capture contextual features, such as why people sit and what makes them do so. In addition, I have discussed studies which claim that sitting often has benefits, or salutogenic effects, for some particular groups. Lastly, by taking a different methodological perspective, the perceptions of sitting were discussed.

By deliberating on these works, it is evident that each contributes to this thesis in different ways, and that my work aligns more closely with studies which discuss positive and salutogenic benefits and sitting, as well as the perceptions thereof. These works illustrate that in many cases reducing sitting is difficult and that exploring its context is important if we wish to reduce the practice. However, this thesis differs methodologically to studies such as Kikuchi et al. (2014), who adopt surveys to explore sitting and its benefits. It also differs in relation to Mcewan, Tam-Seto, & Dogra (2016), who look at perceptions. Rather, this thesis delves into the meaning associated with sitting, which seeks to gather narratives around what it means to my participants and is where the experiences and life experiences of my participants are revealed.

In the next section, I discuss critical viewpoints on self-tracking by adopting a critical social science perspective which frames tracking as an act of labour and surveillance. In addition, I discuss positive approaches to self-tracking which argue that we use such devices to “find meaning in our everyday lives” (Rooksby et al., 2014). I consider these two sets of literature important for understanding, in particular, my office worker participants, as they were not only critical of the device in their free time, but they also creatively adopted it at work to document how much sitting they actually did.

2.3 SOCIAL SCIENCE PERSPECTIVES ON SELF-TRACKING

This section discusses two perspectives on self-tracking. First, I discuss positive arguments that see it as useful for managing our health, and I contend that it can be used in our own way to find meanings in our lives. Second, I present a critical argument on self-tracking that argues that it encourages panopticism, healthism and self-surveillance. These two perspectives help inform my office worker participants, who often engaged with the self-

tracking device critically or used it creatively to document sitting practices whilst in the office.

2.3.1 QUANTIFIED SELF AND CREATIVE SELF-TRACKING

Quantified self (QS) is a movement originating from San Francisco whereby people meet up to share their self-tracking experiences and practices with likeminded individuals (Barta, Kristen & Neff, 2016). Swan (2013) considers this movement “a proactive stance toward obtaining information and acting on it” (p484). Quantified ‘selfers’ are individuals who engage with self-tracking in numerous ways, in order to track and analyse information such as weight, sleep, food consumption, mood or energy levels. In many cases, this also includes access to a social movement of other quantified selfers (QSs), who engage in similar tracking practices (Crawford, Lingel, & Karppi, 2015). The QS movement consists of a community of individuals who are interested in recording and analysing data about regular habits, behaviours or feelings (Neff & Nafus, 2016). Literature on this topic considers them as seeking self-improvement by regulating, monitoring and surveying the body in an attempt to collect knowledge to produce a “better self” (Neff & Nafus, 2016, p16). Self-trackers of this type associate themselves with the idea of “self-knowledge through numbers,” the phrase coined by the QS founder (Yang, 2014).

Literature of this nature often considers QSs to be creative. Nafus & Sherman (2014) identified different types. Their ethnography on the QS movement revealed that individuals in this movement use self-tracking in creative ways, often engaging in what they term “soft resistance,” which they use to refer to those who take on multiple roles as designers and data collectors, as well as critical sense-makers. In this vein, QSs track their embodied experience in multiple ways, as they listen to their bodies in order to interpret data. This has also been discussed by other scholars. Sharon & Zandbergen (2017) identified self-tracking as a form

of resistance against social norms. In seeking to escape the stereotype that QSs are data fetishists, they argue that we should instead use the term *quantifying* selves, as this encompasses the range of QSs which, for them, includes those who have numerous types of trackers, those who track intensively and, in contrast, those who track occasionally. They argue that self-tracking becomes meaningful through its practice, and that whilst ‘datafied’ quantified selfers do exist, so does the idea of the quantifying self who ascribes meaning to self-tracking and the data produced as a result. Sharon & Zandbergen (2017) point out that understanding how self-tracking attributes value and meaning in the context of everyday life, is valuable for understanding the phenomena of Big Data and for exploring the appeal that data have beyond objectivity and quantification. This therefore demonstrates that there are different degrees of QSs, and it is useful for this thesis, as many of my participants did not fit into a QS role but did engage with their self-tracker in creative ways, choosing to adapt it to suit their own needs and to fit in with their everyday lives.

QS is often conflated with tracking in general. Didžiokaitė, Saukko, & Greiffenhagen (2018) explored what they termed “ordinary users” of the calorie-tracking app My Fitness Pal. Their study interviewed men and women who used the application without belonging to a particular group or movement and claimed that the app was used in mundane ways, as basic tracking practices were engaged temporarily to pursue everyday goals (weight loss). Their findings contradict what other literature says about self-tracking, in that the users did not use the application in innovative or long-term ways like QSs do.

I also draw on Pantzar & Ruckenstein (2014) and Pantzar, Ruckenstein, & Mustonen (2016), whose participants realised that work was increasing their stress and heart rate, and Rooksby, Rost, Morrison, & Chalmers (2014), who maintain that self-tracking helps us to “find meaning in our everyday lives.” Rooksby, Rost, Morrison, & Chalmers (2014) note that people’s use of physical activity trackers can be characterised as “lived informatics.” They

discuss how their participants did not logically organise their activity trackers into their lives, nor did one style of tracking exist; rather, participants engaged with different tracking styles that differed dependent on daily or short-term goals and length of use. The participants could be considered as inhabiting different ‘tracker types’, whereby they pursued an interest in technology (fetishist trackers) itself, tracked for specific goals (directive tracking), documented their activities (documentary tracking), linked two variables such as medication and diet (diagnostic trackers) or collected rewards. This contradicts the QS literature and demonstrates how different people have different tracking agendas – in some cases these are aligned with the idea of ‘healthism’ and striving for improved health, while in others they are not so. However, ‘lived informatics’ refers to participants’ use of trackers to “find meaning in their day-to-day-lives,” which is what my office participants did by using their devices to document work practices and sitting.

These studies demonstrate that people can use self-tracking devices in ways that are different from the public health goals of moving more and eating less. Rather, people can use them creatively to document their lives or create alternative practices in explaining health. Whilst these creative activities are often associated with the QS movement, people can also come up with new interpretations and practices on their own, as illustrated by Rooksby, to find meaning in their everyday lives.

2.3.2 SELF-TRACKING AS SELF-SURVEILLANCE

There is also a body of literature that takes a critical view on self-tracking devices, arguing that self-tracking itself forces us into healthism, self-surveillance and panopticism. Lupton argues that self-tracking technologies force us to quantify and govern aspects of our lives by encouraging people to engage continuously in self-care and self-surveillance (Lupton, 2012).

We are therefore encouraged to do so in order to achieve what Crawford (1980) calls

“healthism,” namely the construction and maintenance of good health, whereby every day activities are centred around achieving this goal (Lupton, 2013a).

Workplaces are now encouraging self-tracking as part of wellness programmes, by linking them to pay increases and promotions (Lupton, 2014c). Workers are encouraged to be actors in self-tracking cultures, extending the idea of governing the self (Foucault, Martin, Gutman, & Hutton, 1988). In some cases, self-tracking companies team up with workplaces to sell their tracking devices, and workers give their consent to wear the device, though their information is accessed by their employer only. O’Neill (2016) explored the idea of tracking within the workplace. Surveillance devices within this environment have sought to increase productivity, limit issues such as theft and monitor employees and their work. O’Neil demonstrates how technologies in the workplace are moving toward the “soft domination” of workers, which produces greater isorhythmia (or synchronicity) between bodily rhythms, workers and production. He notes the emergence of new rhythms of production as a result of new tracking devices, which closely align with the “natural rhythms of workers’ attention and biological temporalities.” In this way, rhythmanalysis can be incorporated into work and management in ways that manipulate and accommodate biological processes such as fatigue. Till (2014) contends that self-tracking forces labour upon us when introduced into the workplace setting. He suggests that when exercise is tracked within a workplace, the element of quantification transforms tracking into labour. Exercise in this way is reconfigured as labour, as it becomes a form of panoptical self-surveillance (Till, 2014). The idea of panopticism is concerned with the operation of power in society, in that behaviour can be modified. The idea originates from Foucault (1979)’s book *Discipline and Punishment*, in which he considered panopticism a “symbol of the disciplinary society of surveillance.” The term was used to describe the ways in which an architectural structure of a prison was designed so that those in power could observe inmates in their separate cells (Lupton, 2012).

The concept was not only to allow those in authority to observe the prisoners, but also to encourage the prisoners to engage in self-surveillance and disciplinary strategies.

Panopticism thus emphasises the concepts of the gaze and surveillance, and it can be used to highlight the ways in which self-tracking technologies construct us to act as responsible users managing ourselves. Thus, self-tracking as a form of panopticism engages us in voluntary self-surveillance and management. I draw on this concept in order to discuss how my office worker participants were critical of tracking, and how their arguments about tracking in their free time demonstrated that it was associated with panopticism and self-surveillance.

The literature discussed here has demonstrated a critical approach to self-tracking, in that it brings with it concepts of healthism, self-surveillance and panopticism. Scholars such as Crawford (1980) and Lupton (2013e, 2013b, 2013d) have argued that self-tracking promotes the idea of health, whereby it moves us toward continuous and vigorous monitoring and management. In addition, self-tracking forces us to be panoptical selves responsible for managing and disciplining ourselves. Lupton provided a critical account to self-tracking, maintaining that it blurs the public and private boundaries of our lives. This literature is useful for the office workers, who were critical of the self-tracking device given to them and discussed it in a negative way in terms of their free time.

2.3.3 SUMMARY

The two arguments presented on self-tracking have demonstrated how it can be considered both critical and creative. They highlight that people use it for other purposes other than health, and that there is an element of surveillance in self-tracking which is considered negative. This literature review was important for understanding the office workers in this study, as they were critical of the sitting they engaged in whilst in the workplace and therefore used the self-tracking device creatively to document this practice, which in turn

gave meaning to what they were doing. As a result, many were critical of using the device in their free time, as they felt it was a place of freedom and not for self-surveillance.

2.4 STUDIES ON EXPERIENCES AND MEANINGS

This section discusses the literature on the experiences and meanings participants associate with self-tracking and health. When comparing my two participant groups, it was clear that sitting had different meanings and that these related to the contexts of time, pace and place, which influenced their reduction in sitting and use of the self-tracker. Therefore, in this section I review literature looking at the meanings of health and illness, self-tracking, and place in different participant groups, as a way of understanding how it can aid my own research. I contend that this approach is useful for examining my participants, as it helped to understand how those with COPD experienced their illness and how both cohorts made sense of self-tracking and associations with sitting.

2.4.1 MEANING OF ILLNESS

The meaning of living with chronic conditions has been explored by many researchers. Marx et al. (2016) and Ohman, Söderberg, & Lundman (2003) asked participants to share their illness stories, and both studies found that patients discussed having to adapt accordingly, for example when cooking or washing. The participants in both studies felt at the mercy of and absorbed by their illnesses. These studies help make sense of those living with chronic conditions, much like my COPD participants. In many cases, my COPD participants' reduction in sitting was influenced by their immediate illness, and so this literature helped to make sense of these issues.

The literature has also explored how activity helps or hinders those with a chronic illness. For example, Phinney, Chaudhury, O'Connor and Deborah (2007) note how *doing* allows people

with dementia to find meaning in their lives, as it provides them with feelings of pleasure. They argue that activities such as playing the piano or going for walks create a sense of connection or belonging that do not relate to their illness but do provide a sense of autonomy and personal identity. Their study demonstrates how activities that are considered meaningful for those living with dementia should be encouraged, as they allow individuals to enjoy things that existed before the diagnosis of their illness. I consider this useful for my COPD participants who discussed sitting as a valuable activity for them, which in the same way as Phinney, Chaudhury, O'Connor and Deborah (2007) allowed them to gain pleasure and enjoyment from their lives.

2.4.2 MEANING OF SELF-TRACKING

Literature exploring meanings has also looked at self-tracking use. For example, Copelton (2010) examined how older adults felt when a pedometer was introduced into their walking group. Despite what health research concludes about using self-tracking to aid activity, the older individuals rejected the pedometer, as they found it destructive to group dynamics and felt it introduced competition, which did not align with the existing fun and social element of the group. Furthermore, they felt that the pedometer disturbed the existing norms of the group, as their agendas revolved around socialisation and not competitiveness. This study therefore helps make sense of both of my participant groups, each of which had their own agendas; for example, some of the COPD participants enjoyed valuable sitting time, which did not resonate with sitting less frequently or using the self-tracking device, while many of the office workers felt that the relaxing dynamics of the home did not resonate with tracking sitting. Thus, like Copelton's (2010) participants, many of my participants did not integrate with self-tracking, as it did not fit in with their own agendas or lives.

2.4.3 MEANINGS OF PLACE

Lastly, I draw on the literature to discuss the meanings of place. This strand of work argues that place encompasses specific meanings for individuals, a notion which I utilise to make sense of the office participants, whose meaning of sitting differed depending on place.

Studies such as Duncan et al. (1994) have highlighted how the context of place encourages activity. Their study explored the meanings and motivations of older adults when engaging in mall walking for physical activity. Place was an important factor for these adults, who felt safe and less vulnerable walking in a mall compared with in a park, and that it offered a more social element. They highlight how walking for these older adults was context-specific to a mall, thereby illustrating how context specificity has an impact on activities such as walking.

The meaning of place has also been explored in relation to aging and how older adults form attachments to places laden with memories or comfort, primarily their homes (Brittain, Corner, Robinson, & Bond, 2010; van Hees, Horstman, Jansen, & Ruwaard, 2017). In addition, scholars such as Wiles et al. (2009) suggest that older people tend to draw meaning from the places in which they live. They found that their older adult participants, who spent a lot of time in one location, had attachments to specific places, including their homes.

These studies highlight the importance of place when exploring activity levels and older adults' attachment to place. I use this literature to make sense of the distinction made by the office participants between the place of work and home, which emerged when uncovering the meanings they associated with sitting.

2.4.4 SUMMARY

Context specificity was pertinent when considering my two participant groups, in that sitting inhabited different meanings depending on time, pace and place, any one of which influenced

the use of self-tracking and reducing sitting. This body of literature on meanings and experiences has helped to highlight the importance of exploring the lived realities of individuals. I have detailed how illness, self-tracking and place can be explored in relation to meanings, which I contend allows us to capture the lived realities of individuals and to understand better participants in relation to their everyday contexts (Saukko, 2003). In the next section, I discuss the framework on rhythms and temporality, which I use to make sense of the participants' discussions relating to time, pace and place and which influenced their sitting and self-tracking.

2.5 TEMPORALITIES, RHYTHMS AND BIOGRAPHIES

My two participant groups discussed in different ways the meaning they attach to sitting, varying in relation to place and time. Therefore, in this section, I discuss how I used a temporality and framework to make sense of their responses.

2.5.1 BIOGRAPHICAL AND INSTITUTIONAL TEMPORALITIES

Temporality is the relationship and experience we have with time (Adam, 1995), and it is useful for providing a better understanding of the context of the participants in this thesis. Adam argues that our experiences of time are dependent upon context, as we look back on our pasts and forward to our anticipated futures (Adam, 1990). This notion of biographical temporality was of particular significance to my participants, whose sitting and self-tracking were influenced by discussions surrounding their past, present and futures. This was significant in different ways. For the COPD participants sitting and self-tracking were largely dependent on this notion of biographical time, as their chronic illness greatly affected it. This has been discussed by scholars such as Pinnock et al. (2011), who found that many COPD patients at the end of their lives resigned themselves to their illness, as they could not see a potential future. Temporality and chronic illness have also been discussed by Toombs (1990),

who posits that past and future temporal phrases are inseparable and can help us to understand the manner in which illness is “lived through by the patient” (Toombs, 1990). This literature therefore highlights how illness can be explored in relation to biographical temporalities, which in turn help to understand the COPD participants in this thesis, as their chronic illness affected the way in which they interacted with the self-tracking device and reduced their sitting. In addition, biographical temporality also helped to decipher those COPD participants who looked toward their anticipated future, which they considered to be better and healthier than their present lives.

In a different way to the COPD participants, the office workers used biographical time to discuss the changes in their workplace, whereby work caused them to look back on a previous time when it was better, and the current temporality influenced their use of the self-tracking device. In addition, these participants were impinged by an institutional temporality which dictated their ability to engage in out-of-work activity while still at work, including taking breaks and sitting less. This idea of place and self-tracking has been discussed by Pink & Fors (2017), who examined these factors in relation to self-tracking and noted that it is integrated into our everyday environments and has the ability to mediate our relationships with the world. They consider technologies as enablers for investing new meanings into our environments, the latter of which are inhabited in new ways. This is an important notion for my office participants, whose engagement with the self-tracking device differed according to their environment, thus resonating with Pink & Fors (2017), who contend that “self-tracking technologies and activities are spatial technologies that render our worlds as meaningful because of the ways in which they configure, and are in turn configured by, relationships between mind, body, technology and environment.”

Therefore, it is evident that temporalities, for example the biographical time of past and present, and institutional changes in the workplace, affect experiences in terms of health and

time. This point is useful for understanding the two participant groups in this thesis and their discussions surrounding the influence place and time have on self-tracking and reducing sitting.

2.5.2 RHYTHMS OF WORK AND HEALTH

Whilst temporality helps in unravelling experiences with time and the ways in which health and work influence this element, rhythms help to look at time through everyday life habits and routines, all of which are dictated by pace and place.

Lefebvre defines rhythm as an “interaction between a place, a time and an expenditure of energy” (2004, p.15). He considers rhythms interrelated to our understandings of time and argues that they include polyrhythmia (interrelated rhythms), eurhythmia (synchronised rhythms) and arrhythmia (disruption between rhythms). These rhythms can be seen in my participants; for example, the COPD participants exhibited arrhythmia when they experienced disruption to their rhythms as a result of their illness. In addition, Lefebvre believes rhythms relate to our biological (sleep, hunger, thirst), cyclic (the cosmic, i.e. nature, days, night) and linear (with a beginning and an end, e.g. dawn) lives, namely where, for example, work time is considered linear, or where a clear beginning and an end are evident (Ploger & Lefebvre, 1995, p49).

This concept of rhythms will be considered when discussing my two participant groups, in order to decipher their experiences and behaviour.

Bodily rhythms of pain, fatigue and breathlessness interrupted the self-tracking use of the COPD participants, causing them to disengage with the device and sit more often. The concept of rhythms and motion has been explored in older adults by Phoenix & Bell (2018), who use the idea to comprehend how people experience motion and stillness during these life stages. The concept of rhythms helped to grasp the meaningfulness of activity for the

participants, as some activities were performed out of routine, such as chores, and others were done on purpose to keep them active, for example walking. Playing golf and gardening, for instance, were shaped by bodily rhythms that may prevent activity due to illness. Phoenix & Bell (2018) discuss how bodily rhythms, for example a chronic illness, have the ability to disrupt our existing routines. The participants discussed feeling left behind and having to adopt their activities to enable them to continue, for example taking an ‘elderly’ swimming class, which allowed them to keep up with the speed of movement, or having to take breaks and sit down to relax. I use this literature to inform the understanding of my participants, as the COPD participants also discussed how their bodily rhythms interrupted or prevented sitting less and self-tracking use. In a different vein, the office workers’ rhythms were split between their work and free time, in that their work rhythms were fast-paced and their free time rhythms were slow. The idea of ‘place temporality’ is discussed by Wunderlich (2013), who argues that “the tempo of a place is inherently rhythmical,” since a connection between place and rhythms exists. Her study on urban places discusses how place has its own rhythms which influence people’s patterns and cycles, and this factor gives a place its “temporal distinctiveness.” She refers also to concepts such as pace (fast and slow) to investigate the experience of time in urban places, and the term place-temporality is utilised to refer to “the relationship between sense of time and place and the place-rhythms of everyday urban spaces” (Wunderlich, 2013, p384). Her study highlights the importance of exploring both place and time simultaneously, where the concept of rhythms is considered important. In the same way that place is important for her study, place was also considered important for my office participants, who discussed it in terms of shaping their meaning of sitting and self-tracking use.

The concept of rhythms therefore assists in understanding the ways that the COPD participants changed their rhythms to allow for sitting less and tracking more, or how they

reacted to the tracker and got up if they considered it meaningful, and those whose lives were fragmented by biological rhythms, so tracking and sitting less were not as important. In addition, I use this concept to figure out those office participants whose rhythms, and the speed and intensity thereof, differed depending on if they were at work or at home.

2.5.3 SUMMARY

The literature review provided in this section demonstrates how a framework on temporality and rhythms can be applied to health and self-tracking studies. Bringing the concept of rhythms and temporality together can assist in the conceptualising of individuals' everyday lives in relation to time, pace and place, and it will help to uncover how meanings of sitting are related to these factors. Used together, rhythms and temporality help to provide a better understanding of the experience of time and the ways in which illness and the workplace influence this, as well as habits and routines that are affected by pace and place.

This exploration of meanings allowed me to capture the context of sitting, which for my participants related to the broader concepts of place and time, where temporality and rhythms are important in making sense of chronically ill COPD patients whose sitting and tracking were affected by bodily rhythms. In addition, rhythms allowed me to see how self-tracking and sitting often interrupted their habits and routines, thus influencing the broader context of these activities for them. In a different way to these participants, the temporality framework allowed me to understand the office workers and how institutional temporality affected their sitting and tracking – they suffered through redundancies and pay cuts and compared their previous workplace with their former. Rhythmic differences could be observed between their home and work, with work being fast-paced and busy and home being slow-paced and relaxing. Therefore, rhythms and temporality opened up a new way of exploring sitting and self-tracking that looked at the ways in which time, pace and place influenced these practices.

2.6 CONCLUSION

This literature review has provided a discussion on how the existing literature on public health, self-tracking, experiences and meanings and rhythms and temporality fits together to inform my two participant groups.

The public health research began with a discussion on reducing sitting, which is considered the paradigm for studies seeking to effect change across different population groups. The original aims of this thesis resonated with this literature, i.e. seeking to reduce sitting in COPD and office workers. I also discuss how the public health literature explores barriers and facilitators to sitting, and where health and sitting are discussed in association with one another (Greenwood-Hickman, Renz, & Rosenberg, 2016; Nang et al., 2013) and research which contends that sitting has positive benefits for some population groups (Chastin, Schwarz, & Skelton, 2013; Kikuchi et al. 2014; Palmer et al., 2018). Lastly, I discuss how participants perceive sitting (Mcewan et al., 2016).

I located my work in relation to these arguments, as the existing literature makes broad claims about sitting in terms of health, in that it can either be detrimental or have positive benefits. However, in exploring my two participant groups and the meanings they associated with sitting, I found that sitting was related to time, pace and place, which shaped their experiences of sitting less and self-tracking. I focus on meanings in order to gain an in-depth understanding of my participants' worlds and capture the lived experiences of their lives.

The second strand of literature I discussed focuses on self-tracking in both positive and critical ways. I discuss positive arguments of self-tracking, which consider it as enabling for behavioural change and can be used to "find meaning in our lives" (Rooksby et al., 2014). I also draw comparisons between this notion and my office participants, who engaged with their device to document the amount of sitting they did in the workplace, in order to critique the workplace for making them sit down too much.

Additionally, I discussed the critical self-tracking literature, which argues that it conforms us to healthism, panopticism and self-surveillance. This hypothesis is useful for the office participants, who were critical of using the self-tracking device during their free time. This self-tracking literature therefore helps to understand the office participants, who were both critical and creative in terms of their self-tracking use.

The third strand of literature addresses the meanings and experiences of illness, self-tracking and place and demonstrates the importance of adopting a non-judgemental point of view when exploring the lived experiences of participants (Saukko, 2003). The literature in this section helped to understand the different meanings of sitting experienced by my two participant groups and illustrated how these provide a deeper understanding of people and their lives, as they allow them the freedom to discuss this matter. I argue that sitting had different meanings dependent on place and time, and it is therefore best understood in relation to a rhythms and temporality framework, as this provides us with a way of understanding of how individuals' meanings of sittings relate to time, pace and place. This framework opened up a novel way of understanding sitting and self-tracking, and it helped to make sense of my participants' relationship with these elements and how they resonated with the contexts of place and time.

CHAPTER 3 METHODOLOGY

3.1 INTRODUCTION

In this chapter, I discuss the research methods used in order to achieve the aims of this thesis. I detail the recruitment and data collection processes for both studies, in which I interviewed 21 patients with COPD, 31 healthcare professionals, including doctors, nurses, healthcare assistances and physiotherapists, and 24 office workers. I also outline the data analysis process, in which I used a thematic analysis to code and interpret the interviews (Braun & Clarke, 2006). I have divided this section into two, whereby I discuss first a multidisciplinary mixed methods study entitled ‘COPD-SEAT’, and then I follow this with a discussion of my second study with the office workers. In both cases, I explain the participant and recruitment processes, the collection of interview data and the study procedure. I end with a description of the analysis process.

3.2 COPD-SEAT

3.2.1 THE PARTICIPANTS AND RECRUITMENT

I begin by discussing the recruitment process and participants from the point of view of a multidisciplinary mixed methods study I was involved in with patients with COPD.

Individuals admitted to a UK hospital following an acute COPD exacerbation were screened for eligibility by specialist nurses. Patients had to be between 40 and 85 and have a confirmed diagnosis of COPD, with this being their primary reason for their admission to hospital. In addition, all patients had to have had fewer than four exacerbations in the previous year and be physically fit according to the COPD specialist nurses.

Dr Mark Orme (MO) was the researcher responsible for recruitment of participants, obtaining

consent, baseline data collection, intervention implementation, maintaining contact with participants and follow-up data collection and quantitative data analysis. MO approached the eligible patients and gave them verbal descriptions of the study as well as a participant information sheet following their visit from a COPD specialist, as part of their normal care routine. MO revisited any patients who were interested and obtained consent forms from each of them. Block randomisation was used to randomise the patients, whereby sequenced numbers were placed in sealed numbered envelopes. In total, 111 patients were approached, and a total of 35 patients consented to be part of the study. Two were identified subsequently as having early-stage dementia, therefore resulting in a total of 33 eligible patients. Table 1 gives an overview of the patients' gender, age and home oxygen usage. The majority of patients were female (15 of 33) and over the age of 60 (15). Three patients in the sample were on home oxygen.

Table 1: Characteristics of COPD participants

Characteristic	Frequency
Gender	
Male	6
Female	15
Age (years)	
51-60	6
61-70	5
71+	10
Home oxygen use	
Yes	3
No	18

In addition to these patients, 31 healthcare staff were also asked to be part of the study. This involved recruiting doctors, nurses, healthcare assistants, COPD specialist nurses and physiotherapists. The only eligibility criterion was that the healthcare staff had to be working at the hospital. Table 2 details the numbers of healthcare staff recruited. As the COPD specialist nurses helped screen for the eligibility of the patients, they were happy to participate and help with the study outcome. Whilst I tried to recruit equal numbers of healthcare staff, this was not feasible, as many did not have time to attend interviews with me. In addition, it was also hard to locate many staff and schedule them to participate, as they had busy schedules, so I recruited as many as possible within the time limits of this study and tried to encompass as much variety in order to gather a range of views.

Table 2: Healthcare participants' occupations.

Healthcare staff title	Frequency
Doctor	2
Nurse	12
Healthcare assistant	2
Physiotherapist	6
Research staff	2
COPD specialist nurse	5
Ward sister	2

3.2.2 STUDY PROCEDURE

The aim of this study was to assess the feasibility and acceptability of a randomised control trial seeking to reduce sitting, using an educational booklet and a self-tracking device in individuals with COPD admitted to hospital following an acute exacerbation. The patients

recruited were part of a two-week intervention trial which began following their discharge and allocated them to one of three groups. The education group received written and verbal information about reducing sitting, as the education booklet included top tips to sitting less. The booklet was entitled *Sit less, move more: live healthier* and was adopted by the randomised control trial *On your feet to earn your seat* (White et al., 2017). Verbal information was delivered by MO, who did this face-to-face with the patients. The feedback and education groups received the same verbal and written information as the education group, but in addition they were given a self-tracking device to be worn around the waist (LUMO). This device was set up by MO, with the patients' input, for an interval of time during which it would vibrate after prolonged sitting, to encourage the user to get up. The participants were shown how to wear the device and how to turn it on, off and connect it to the application. The patients in this group also received an iPod touch, which was connected to the self-tracking device. The iPod touch allowed the participants to access the application that the LUMO connected to. The application provided them with feedback on their daily and weekly sitting, standing, walking and stepping. All patients were shown how to use both the device and the associated app. Patients were also asked to self-report on their symptoms (COPD assessment test), fatigue (functional assessment of chronic illness therapy-fatigue), anxiety and depression (hospital anxiety and depression scale), their fear of falling (falls efficacy scale-international) and their usual time spent sitting (Marshall sitting time questionnaire). In addition, they were asked to be part of two interviews, one before they began the study and one following the study. Measures and a short physical performance battery were performed at follow-up. Measures included height, weight, waist circumference and BMI. The third group was the control group. All groups wore an ActiGraph wGT3X-BT accelerometer, which collected data on their steps and the intensity thereof. During the study period both myself and MO kept notes to the study process. Documenting this information,

including notes on how the intervention was delivered and responses to interview questions, allowed us to reflect upon the study both during and after and make necessary changes as required.

The trial received full approval from the research ethics committee (15/EM/0433), and a detailed description of this protocol has been published (Orme et al., 2016) as well as the findings (Orme et al., 2018).

3.2.3 INTERVIEWS

I conducted all interviews with patients and healthcare staff. Interviews were semi-structured and thus whilst I was able to probe interviewees to elaborate when answering, an interview schedule was created in order to prepare questions of interest in advance. These questions were flexible in that they could be altered when necessary, for example during interview 2 some personalised questions may have been added if specific things were mentioned in interview 1. These questions became the pro forma for the interview and could be considered the tools to draw out participant experiences. The interview schedule was firstly discussed amongst the whole research team so that each of our ideas and research aims could be emphasised and incorporated into the schedule. The schedule was then drafted by myself with the help of my supervisors PhD supervisors Dr Paula Saukko (PS) and Professor John Downey (JD) and then distributed amongst the remainder of the research team. These schedules for the patient interviews can be seen in Appendices 1 and 2. Interview 1 was conducted prior to the intervention, asking patients about their lives, what living with COPD was like and their sitting habits. Questions included: “Tell me about your COPD” and “If I say the word ‘sitting’, what does it make you think of?” The first interview also asked the patients if they had prior experience with technology, particularly self-tracking devices, and what their thoughts and feelings were on the upcoming study.

I conducted 11 follow-up interviews after the two-week intervention. I asked the patients what they had been up to since I last saw them, how they had got on with the device and/or education booklet and how they had got on with the study, including their overall thoughts. Interview 2 also contained personalised questions relating to information revealed in interview 1 and data obtained through the ActiGraph and LUMO. Personalised questions emerged from the transcripts of interview 1 and were often used to probe or encourage participants to discuss previously mentioned experiences and activities.

Whilst patients were having their measures taken by MO, I downloaded data from the LUMO, which I then used as an aid during the interviews. I asked those who were in the feedback group to show me particular days on their application and discuss specific instances with me to enhance the conversation further. I also mentioned days when steps or sitting may have increased or decreased, in order to prompt the patients to think back.

In addition to these interviews, I also conducted interviews with healthcare staff. In total, five interviews explored how the staff felt about such a study and what they perceived as possible outcomes. This schedule can be seen in Appendix 3. I then conducted a further 33 interviews after the study and again asked healthcare staff how they felt about the study, if they had experienced anything since it had begun and if they felt a study like this would be useful for reducing sitting. Particulars about the study, such as use of the technology and when it should begin, for example, were also discussed. The interview 2 schedule for healthcare staff can be seen in Appendix 4. These healthcare interviews were useful for informing my understanding of the research topic; however, given time constraints, I was unable to analyse and adopt these in the current thesis.

I also conducted interviews with patients who dropped out of the study. I rang them following their withdrawal and asked if they would like to discuss with me their reasons for dropping

out. Questions explored their general thoughts on the study, reasons for dropping out and the context surrounding their withdrawal. A total of 10 interviews of this nature were conducted, and a schedule can be found in Appendix 5. In all of the interviews I attempted to gain the trust of the interviewee and allow them to articulate their feelings, thoughts and experiences with me in a safe and comfortable way. By doing so I aimed to ensure that the research results would be true to the interviewee.

3.3 OFFICE WORKERS

3.3.1 THE PARTICIPANTS AND RECRUITMENT

I recruited 25 participants from an office workplace to take part in a study exploring their use of a self-tracking device (LUMO) to reduce their sitting. I chose to recruit from one workplace, namely my local county council, and recruited these participants using two methods. First, I contacted a worker at the council, who put me in touch with their healthy workplace adviser, who is responsible for health and well-being. This person helped me recruit participants by advertising my study at various health and well-being workshops, including a workshop collecting the blood pressure measurements of council workers. In addition, I produced a poster which was advertised in the council's online magazine. The poster detailed the study aims and asked participants to email their interest to me. In total, 32 people contacted me and a further 25 people consented to be part of the study, with one dropping out before the end of the study, thus leaving a total of 24. Most participants were female (19) and aged between 31 and 50. Most (21) were employed in intermediate and managerial roles, and the majority had children (14). Table 3 outlines the participants' characteristics, including their gender, age, occupation and if they had children.

Table 3: Participant characteristics and occupation.

Characteristic	Frequency
Gender	
Female	19
Male	5
Age	
21-30	4
31-40	8
41-50	7
51-60	4
61+	1
Job occupation	
Admin	2
Intermediate role	11
Managerial role	9
Senior managerial role	2
Children	
Yes	14
No	10

3.3.2 STUDY PROCEDURE

Before beginning the recruitment process, I obtained ethical clearance from Loughborough University. This required me to follow guidelines for researching human participants and involved completing an ethics approval checklist, thereby demonstrating that my study

conformed to the checkpoints deemed essential to carry out research using human participants. This information can be found in Appendix 6.

Once approved, and following recruitment, I sent brief descriptions of the study and requirements to eligible participants who had contacted me. The only eligibility criterion was that they had an IOS device, as this was a requirement for the device to work. If the individual was interested, I then sent a further email asking to meet and the participant information sheet, which can be seen in Appendix 7. At the first meeting, I discussed the study with the participants and their right to withdraw at any point, and then consented them to participate (Appendix 8). At this stage, I then interviewed the participant. At the end of meeting 1, I explained the device to the participant and demonstrated how to use it alongside the application, which was installed on their phone

In regards to the device itself, I showed the participant how and where to attach the device, demonstrated that it fit around the lower back and fastened via a velcro adjustable belt. I proceeded to show the participants how to turn the device on, with a button located on the front and described the different colours the device could flash – blue indicated a connection to bluetooth, green indicating a successful connection, yellow indicating a low battery and red indicating a very low battery. I proceeded to discuss the application that the device connected with to the participants. First I explained how the application was specially designed by Loughborough University and therefore needed a link to be downloaded, which I sent before the meeting and downloaded for them during our time together. This required me to click the link and press download, the application then downloaded as original applications would and allowed myself and the participants to access it on their device. I opened the application up and demonstrated its features, showing the participants where to locate their stand and sitting times, for example, and how they could see this on a daily, weekly and fortnightly period. I asked the participants about the duration of the vibrational prompts, and

proceeded to set this up for them in the settings tab. Most of them specified a prolonged sitting time of 60 minutes, except one participant who opted for 45 minutes, and another who chose 30 minutes before vibration prompts went off. I explained how when they had been sat for this specific amount of time, the device will emit a light vibration to remind them to stand. I asked them to wear the device for two weeks and to start this on the following day, so a total of 14 days' data could be collected.

In addition, I asked the participants to take pictures of anything they felt related to sitting and to email these to me. I felt this would provide a visual aid in the interviews and allow me to discuss them at the follow-up interview. However, only a few participants did this, so it did not provide much more additional detail than the interviews themselves. After three days, I emailed all participants to check they were happy with the device, if they had any questions and to set up follow-up interview.

3.3.3 INTERVIEWS

Interviews with office workers were all conducted by me. An interview schedule was also created and used in this study. This interview schedule was based on some of the questions used in the COPD-SEAT study. The interview schedule was created by myself with the help of PS and JD and then distributed to the remainder of the team. Whilst I mostly followed the interview schedule throughout the interview process, I also added questions to probe the participants for deeper examples and experiences. These interview schedules can be seen in Appendices 9 and 10. Interview 1 focused on the participants' life contexts, including their daily routines, their families and hobbies, as well as their work lives. I asked them about their sitting and sitting habits and experiences, including the open association question, "What do you think of when I say with word sitting?" In addition, interview 1 was interested in the participants' prior experiences with technology and their study expectations. The interview 2

schedule began by asking the participants about the previous two weeks, their experiences with sitting less often, the self-tracking device and the study as a whole. Furthermore, they were asked in particular how they got on with the device, when they wore it and took it off and what they did when the device vibrated. Interview 2 also contained tailored questions relating to the participants' discussions in interview 1. An empathic approach was adopted when interviewing participants to allow participants to feel comfortable enough to open up about their work experiences and feelings with me.

3.4.1 ANALYSIS

All interviews were audio-recorded and transcribed verbatim. I felt this would produce a higher fidelity in comparison to writing notes using pen and paper. However in addition to audio-recording the interviews I also took brief notes of the interview thought out the interview process as a useful source of supplementary information (Davies and Dodd, 2002).

The transcription process was completed with the help of my dad (WW) and then checked by myself, or transcribed fully by myself. A sample of these transcripts was sent to JD and PS to check reliability and consistency. Transcripts were initially analysed by myself. I used NVivo 10 qualitative data analysis software to facilitate the analysis process and followed the basic principles for thematic analysis coding outlined by Braun & Clarke (2006). To begin, I identified recurrent patterns in the transcripts, using open coding. I then analysed these open codes further and used them as probes during further interviews, which allowed for new leads and themes to emerge. I did this until no new codes emerged and saturation was reached.

Thus open coding process resulted in numerous codes which were then shared with PS and JD alongside the interview transcripts. These open codes were not necessarily all study or project specific thus a more thorough analysis process followed and selected codes of data were then sampled. These were again shared with JD and PS to ensure reliability and

consistency of coding. Sub-themes and codes were subsequently created which theoretically related to codes and concepts of the study and project, for example sitting as pleasurable and work makes me sit. A constant comparison method was applied which ensured that as new codes or themes emerged, interviews would be re-analysed to search for these new codes and themes (Glaser, 2008; Glaser & Strauss, 2009). This ensured coding was reliable and interpretations of results were credible (Nowell, Norris, White, & Moules, 2017). I then moved on to selective coding, which identified codes and correlated them to identify patterns where relevant themes were created (Braun & Clarke, 2006). Interview 1 for both groups centred around the context of sitting, as participants discussed their experiences. For the COPD participants, clear codes relating to what sitting meant to them were apparent, so I began by focusing on this particularly. In the same way, the office workers also discussed how they viewed sitting, albeit in a different way, which related to work and free time. Thus, I began coding in terms of meaning again, but this time it was with a different focus that related to the contexts of work and free time. Initial selective coding of both interview 1 and 2 revealed that the participants in both groups related their meanings of sitting and self-tracking use to wider issues relating to time and place. As such, I coded Chapters 6 and 7 of this thesis regarding the rhythms and temporality framework, seeking to unravel the participants' use of the self-tracking device and sitting. Thus a theoretical coding scheme could be applied to the interviews and in the same way that the open coding process was discussed and shared with PS and JD, the selective coding process also underwent member checking to ensure that findings and interpretations were credible and were agreed upon (Nowell, Norris, White, & Moules, 2017).

The final stage of the coding process was to conceptualise the codes and identify relationships between them and themes, i.e. major themes and sub-categories were established. These themes were then reviewed to ensure they contained enough material to

support them. Creating these themes was easier in some analytical chapters than in others. For instance, the COPD patients' meaning, as discussed in Chapter 4, had clear themes in line with what sitting meant to them; conversely, this was harder when analysing the office workers, who did not categorise their meaning as easily as the COPD participants managed to do. Consequently, it was harder to interpret the data and see what was going on.

However all themes and data had to correlate together meaningfully, in order for clear and distinctive themes to be present. This involved re-reading all interview data in accordance with the themes, to ensure a coherent pattern emerged (thus corroborating the validity of the dataset) and that it accurately reflected the themes created. Once reached, clear themes were evident which provided an overall story with the data (Braun & Clarke, 2006). Theoretical saturation was reached when enough interviews were collected to conceptualise substantive codes and could be interrogated into theoretical patterns (Glaser, 2008). It is important to remember that theoretical sampling differs depending on theory chosen and thus this needs to be taken into account to ensure credibility of the sample.

Lastly themes were then 'defined and refined' (p.22), meaning that each example had to have an identifiable character that set it apart from other themes. They were then named and a full description given. The same method was applied to the sub-themes, i.e. they were clearly distinguished and then named and described. Braun & Clarke (2006) reason that once successfully refined, a researcher should be able to describe a theme in one sentence.

In order to successfully code these interviews, extensive literature was referred to and consulted to enable me to possess enough skill and knowledge to code the interviews in a reliable way and ensure a more inductive process. In addition I remained open during the coding process in order to further enhance reliability. Throughout the analysis process myself, JD and PS met to discuss codes and make sense of the themes emerging. The theoretical choices made throughout the study were discussed amongst the wider team to

ensure rigor. In addition samples of the audio-tapes and transcripts were sent to the research team to ensure the trustworthiness of the data collection. Regular debriefing sessions with the research team, and in particular JD and PS, ensured that the observations, interrelations and generalisations were coherent across the team. These steps helped ensure the quality of the research process and allow me to demonstrate that the data collection and analysis was conducted in a precise and consistent manner which can be considered credible (Davies and Dodd, 2002; Nowell, Norris, White, & Moules, 2017).

The themes created were then used to write the four empirical chapters, with interview data extracts used to demonstrate the themes and capture their essence, in order to provide an analytical narrative which would make an argument relating to the overall aims of the thesis.

Thick descriptions of these themes are discussed in the analytic chapters and I discuss these in these four analytic chapters to come.

I move on to reflect upon the role of the application and self-tracking device and discuss insights into how these are used, or not, by the participants.

3.4.2 THE ROLE OF THE WEARABLE DEVICE AND APPLICATION

The LUMO self-tracking device was given to participants to aid in reducing their sitting time. The LUMO is a waist worn device that attached around the lower back via belt with a Velcro fastening. The self-tracker itself served two purposes: first it allowed the participant to track their sitting, standing, walking and driving time. This was displayed in the application that accompanied the device. The application allowed the user to see the time they had been sitting standing, walking and sleeping, as well as the percentage of time they had been doing each activity on a pie chart. This allowed them to see how their day was broken up. This could also be looked on a weekly and fortnightly graph. Second the device prompted the user to break up their sitting time, this was achieved by the device sending small vibrational

buzzes through the device every hour they had not stood up in-between sitting. This was used to encourage the user to get up and split up their sitting with standing and walking.

Participants who used the device would for example, get up when the device buzzed and make a cup a tea or take the dog for a walk or would go to the toilet. The participants who didn't use it left the application on the bedside table, or didn't wear the device and left it uncharged. Many wore the device but ignored the buzzing, so for example continued with their day working in the office or watching television. Many still observed the data in the application which they discussed demonstrated how much or little they sat and walked.

I discuss more detailed examples of LUMO and application usage and non-usage in the analytic chapters.

CHAPTER 4 MEANINGS OF SITTING IN THE CONTEXT OF CHRONIC DISEASE

4.1 INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is a lung ailment that is typically characterised by severe shortness of breath, chronic coughing, wheezing, purulent sputum production and fatigue (in various combinations and severities) (Han, Dransfield, & Martinec, Fernando, 2017). Consequently, individuals with COPD often avoid physical activity, becoming trapped in a vicious cycle of inactivity and dyspnoea (Polkey, 2011). As such, the majority of their time is spent in a sedentary manner and by being physically inactive (Matei et al., 2015, p2; Pitta et al., 2005). Sedentary behaviour (SB) is characterised by low-energy expenditure while in a sitting, reclining or a lying posture (Tremblay, Aubert, Barnes, Saunders, Carson, Latimer-Cheung, Chastin, Altenburg, et al., 2017). Furthermore, physical inactivity puts patients at an increased risk of being admitted to hospital (Garcia-Aymerich, Lange, Benet, Schnohr, & Anto, 2006), while replacing sedentary pursuits with low-intensity activity has been associated with reduced risk of experiencing an acute exacerbation (Donaire-Gonzalez et al., 2015), which is characterised by a worsening of symptoms beyond normal day-to-day variations (Celli & Barnes, 2007).

Behavioural change interventions in COPD, attempting to improve patients' lifestyle-embedded activity, have had little success (Cindy Ng, Mackney, Jenkins, & Hill, 2012; Watz et al., 2014). Thus, targeting reductions in sedentary behaviour may be a particularly useful and appropriate strategy for improving health among this patient group (Cavalheri et al., 2016; Hill et al., 2015).

Increased amounts of sedentary behaviour have been linked to a higher risk of ill health in older adults. For example, a recent systematic review demonstrated that it is associated with

harmful effects on biomarkers for cardiovascular disease and metabolic syndrome, especially for people aged over 60 years (Wirth, Klenk, Brefka, & Figuls, 2016).

Whilst sedentary behaviour has been linked with negative health outcomes, research has also distinguished between different types of sitting, which may have more negative or positive effects. Physiologically, sitting can be active (e.g. cycling) or passive (e.g. watching television) (Tremblay, Aubert, Barnes, Saunders, Carson, Latimer-Cheung, Chastin, Altenburg, et al., 2017). Hamer & Stamatakis (2014) examined popular sedentary behaviour activities (TV viewing, internet use, reading) in relation to mental health. Whilst no increase in depressive symptoms was found from baseline to follow-up, a longer period of TV watching was linked to higher depressive symptoms. Internet browsing and reading were associated with lower depressive symptoms, thereby suggesting that different sedentary activities may have different impacts on mental health. Other scholars, such as Kikuchi et al. (2014) Palmer et al. (2018) and O'Neill & Dogra (2016), report similar findings. These studies consider the salutogenic or positive benefits of sitting and therefore resonate with the participants in this study, who discuss sitting as being valuable to them.

Qualitative studies have looked into how older adults perceive sitting, and they have noted positive perceptions. In an interview study examining the experiences of sitting of those living with rheumatoid arthritis (RA), Thomsen et al. (2015) found that participants had to adapt to a new way of living after their diagnosis, which meant sitting down when their body told them to do so. However, some participants noted that their sitting had nothing to do with their RA but was a personal preference (pp.5-6). Mcewan et al. (2016) found similar findings with older adults, whose sitting had cognitive, social and psychological benefits. Qualitative studies have also explored determinants of sitting. Chastin et al. (2014), for instance, examined the determinants of sitting in older women and found that many did not see the benefits of standing more, and those who did so felt that it was not feasible for them, given

their physical or mental state (p778). Their study also highlighted that sitting was determined by pain, which the women talked about as being both an incentive to sit (to relax, taking a break, limited physical ability) and a motivator to stand up (pain and stiffness from sitting too long, things to do in the house, relieving boredom) (pp.780-782). A qualitative study exploring barriers and facilitators to sitting among overweight and obese older adults after an intervention (a wearable sitting time monitor) found that they were motivated to reduce their sitting to improve health, especially when they could do things they enjoyed, such as daily walking, or things that were easy to do in the physical environment, such as going up stairs. Barriers to reducing sitting time included enjoying seated activities and being too tired or ill (Greenwood-Hickman, Renz, & Rosenberg, 2016).

So far, no qualitative studies have investigated sitting in the context of COPD. However, qualitative research into COPD alone has underlined issues that are pertinent to identifying sedentary behaviour in this group. Marx et al. (2016), for instance, conducted semi-structured interviews to explore COPD patients' illnesses from the manifestation of their first symptoms, to their most current ones. They found that lack of mobility affected their normal daily activities, and this eventually led to social isolation, fewer life opportunities and reduced independence, leaving them feeling "at the mercy of the disease" (p3). Patients explained how they gradually became unable to do things as the illness progressed, and eventually their attempts to keep a sense of 'normality' became impossible (p3). Pinnock et al. (2011) interviewed COPD patients over a period of 18 months to gain an understanding of COPD as the illness progressed. The interviews revealed a passive approach to the illness, whereby individuals discussed learning to accept the illness and having to come to terms with it by modifying how they performed their normal activities, in order to manage their breathlessness. Many patients also normalised their illness as "a result of old age" (p7). Paap et al. (2014) asked COPD patients to discuss how COPD affected their quality of life. The

most prominent responses related to physical health, including the inability or struggle to complete light activities (such as walking or household chores), and coping with COPD restrictions, including having to avoid activities all together and finding a balance between rest and activity. Patients discussed fatigue and general inability as being most relevant to preventing them doing things. Dobbels et al. (2014) used semi-structured and focus group interviews to explore what physical activity meant to individuals with COPD, as well as the limitations experienced due to their illness. Patients discussed a reduced amount of activity related to walking, household tasks, self-care (dressing, cleaning), walking up stairs and doing leisure activities. Follow-up questions revealed that the patients took breaks, paced themselves, spaced activities across the day, used aids or completely gave up performing some activities, in order to cope with their symptoms. The study highlights the challenges people with COPD face with daily activities and underlines the importance of surveying this issue further.

Qualitative studies have also explored which activities individuals with COPD consider valuable, including mobility and caring for the self. Barnett (2005) found that those suffering from the condition considered caring for the self (washing, dressing) as the bare minimum in order to survive, and whilst these activities were often difficult to perform, patients explained that it was important for them 'not to give up' and try to lead normal lives independently. Harris, Hayter, & Allender (2008) observed that whilst COPD restricted participants' ability, they explained that they wanted to remain physically active within their own boundaries and capabilities, as this gave them a sense of accomplishment (p707).

Against this backdrop, our study explores the meanings associated with sitting in individuals with COPD who have been admitted to hospital for an acute exacerbation. We take our lead from public health studies illustrating different perspectives on sitting, where scholars such as Kikuchi et al. (2014), O'Neil & Dogra (2016) and Palmer et al. (2018) observe the

salutogenic and positive benefits of sitting and categorise them accordingly, for example passive and active sitting. These categories resonated as important for my participants, as some discussed being active and busy as being more purposeful. Mcewan et al. (2016) applied a different methodology to studying sitting, by focusing on perceptions in this regard. This allowed the older people in their study to discuss the contextual issues surrounding sitting. Last, we come to studies exploring the determinants of sitting, for example Chastin et al. (2014), which make associations between the practice and health indicators. The presence of chronic disease, such as COPD, adds another dimension to the meanings, as patients may find any activity, including standing up, challenging (G. Marx et al., 2016) and something that can be worsened by an acute exacerbation.

This chapter draws on the above public health literature but takes an approach which makes less generalised claims about sitting being salutogenic or detrimental. Instead, I delve into these COPD participants in relation to the meanings they associate with sitting, which in turn allows me to be “truer to lived realities of others” and do justice to individuals’ experiences of themselves and their lives (Sauuko, 2003). In studying meanings, we focus on the participant’s point of view, or lived experience (Sauuko, 2003; Wilkinson, 1998), by being open to the idea that associations attached to sitting tell us something important about the life context of the participant and the way in which this practice fits into it (Barnett, 2005; Harris et al., 2008).

4.2 RESULTS

4.2.1 NOT *JUST* SITTING

The striking feature of many interviews was the way in which our participants emphasised that they did not *just* sit:

“I’m not one for sitting down, and I can’t sit down and do nothing, and that’s why I read. I can’t just sit, I have to be reading or something” (FE018)

“I’m not sitting too long... When I’m in the conservatory, I’ll stand in there, watching the TV. Especially to give your legs a rest, or some exercise. I don’t like sitting all day, like some folks do” (MF005)

“Sometimes, I have a little nap on the chair, but I need that ‘cause I’m up early, and I don’t sleep very well ‘cause my husband has osteitis, and he’s tossing and turning and up at the toilet all night. So what sleep I can catch up on, I do when I’ve done my bits. It’s not because I’m lazy, but I just have to catch up, so that doesn’t really count” (FE021)

On the one hand, these were attempts to deflect their perceptions of moral blame for sitting, which often had negative associations attached. Fundamentally, they did not want to be associated with being lazy or with doing something meaningless or invaluable. Thus, on the other hand, the participants did not see themselves as ‘just’ sitting but doing other things as well, which I elaborate on below.

4.2.2 SITTING AS ENABLING

Many of our participants explained that since their diagnosis of COPD, daily activities had become difficult, though completing daily tasks allowed them to live a normal life. These activities included household chores, such as cooking, and self-care routines, such as dressing or washing oneself. Our participants explained that in order to *enable* them to complete such activities, they needed to sit and catch their breath or rest for a few minutes, before moving on to complete the task:

“To shower, I have a perch to use. When preparing dinner I have to sit, and my husband dishes up whilst I get my breath back” (FF027)

“I can’t do it all without a break. I won’t go anywhere unless I know there are some benches for me to sit down and get my breath back. I get scared of doing stuff, if I don’t have a seat around me, because I have my limits” (FF007)

Whilst both genders tended to describe sitting as enabling during household chores, there were gendered differences in the specific chores mentioned:

“Sometimes, I just stay in and tinkle about doing my ironing in stages, perhaps iron a shirt and sit down” (FF017)

“I try to keep myself active doing things: moving around all day, cleaning, walking, fetching papers, picking up after my husband, washing. Just general house stuff, the things you have to do ‘cause nobody else is going to do it for you. Well, not in my case” (FF021)

“When I walk the dog, I don’t rush. I walk, stop, slow down, walk, sit down, walk, sit – I just take my time. Sometimes, I sit on a wall for a minute, then I carry on” (MF010).

The women with COPD in our sample primarily did the majority of household chores, for example cooking and cleaning, and therefore used sitting as a way of allowing them to still do them. Many of the women also described having to look after their husbands, as evidenced by FF021, as chores would not get completed if they did not do them themselves.

For participants living alone and those who lived with partners or had careers, taking a break allowed them to do things by themselves, thereby giving them a sense of independence:

“I get myself dressed and showered, but it does take me a long time, and I have a seat to help me. It’s the only way I can do it myself. I step into the shower, and then I’ve got this stool for when I come out, so I sit down and get my breath back and wrap the towel around me, gradually getting myself dry. It takes me ages to get dressed, but I do it myself” (FF017)

“I do sit a lot to help me, ‘cause, I mean, my parents are too old to look after me. I’ve got my little dog for company, but I’m on my own, so I’ve had to learn to do things by myself” (FF030)

The participants felt that being independent was more important than whether or not they could complete tasks without sitting, and so sitting was an enabler for them to do things autonomously and gain control of their lives. Whilst all the participants living alone certainly resonated with this finding, so did many of the participants who lived with others or had daily help from family. This illustrates the importance of independence for my participants and how sitting contributes to achieving this aim.

Sometimes, enabling sitting was referred to in more general terms as catching a breath, before continuing with usual activities:

“I stop doing what I’m doing and basically just take a chill pill, sit and just try and take some deep breaths” (FE030)

“I have to slow my own breathing down, so I do end up sitting down and resting a lot, but I have to, don’t I?” (FE033)

This was context-specific to my participants, whose illness resulted in extreme breathlessness and fatigue on a daily basis. Therefore, many talked about having to sit to take control of these symptoms, with sitting providing them with a prevention technique in this regard.

Sitting as enabling therefore provided my COPD participants with a way to live what many described as ‘normal’ lives. In addition to controlling their illness symptoms, sitting also provided a means of engaging with activities they considered part of normality, such as household chores, and thus allowed them to continue engaging in activities in which they may have indulged prior to their COPD diagnosis. Whilst some activities had to be adopted, for these participants merely performing them was considered successful.

4.2.3 SITTING AS SATISFYING

Many of my participants associated sitting with positive meanings; it was seen as *satisfying* to them in different ways.

A majority associated sitting with relaxation, albeit with an emphasis on a need to recover or rest, similar to the previous theme of sitting as enabling:

“In the afternoon, I do get to the stage where I sleep for probably 20 minutes, maybe 40 minutes. I have a cat nap; I’m not asleep, I know what’s going on. I’ll lay on the seat and bring the chair up and the dog will jump up here and he’ll go to sleep on my armchair. I’ll have a nod or might read the papers, and all you’re doing is charging your batteries up” (MF010).

“The only times I sit are when I’m having a meal and when I’m sat relaxing in the afternoon on the bed. So it’s relaxing, putting my feet up and cuddling up with the dog watching a good movie” (FF008)

In a different way to the previous enabling sitting, performed to catch a breath and recover, relaxing sitting could be described in elaborate terms of napping, reading the paper and snuggling with the dog, all of which were associated with the need to recharge, and with pleasure or enjoyment.

Sitting was also often associated with satisfaction in terms of relaxation and doing something enjoyable, such as watching TV or socialising, and taking their mind off things:

“I’m relaxed, totally relaxed. I don’t get hecked up, it’s safe. I quite enjoy sitting, because it takes my mind off things” (FF017)

“Sitting, to me, is just sitting in my chair watching my telly for about 10-15 minutes. ... I do like watching my soaps” (FE021)

“I go out for lunch with friends, and that’s sitting. I’ll sit in the garden, maybe with a book. I sit for the sake of it, sit for any reason, really. It’s not because I’m on my feet all day, I just enjoy it” (FF026)

The participants discussed a need to enjoy their lives and gain satisfaction, and so in many ways sitting allowed them to switch off from their illness and engage in something they enjoyed.

Many participants talked about activities that they did whilst sitting, which they considered not only satisfying, but also cognitively rewarding, i.e. keeping their minds ticking over:

“I’m not really one for sitting down and doing nothing, and that’s why I read; it’s better than doing nothing, but it’s all I can do now, really. Knit and sew, anything to keep my brain ticking, really” (FE018)

“I could sit with a good book for hours – and I do, frequently. And my painting – I do that a lot – and that’s what I do most of the time, really. I find both really relaxing and I enjoy it, but I can’t just sit there and do nothing, I have to be doing something like that to keep my mind ticking, you see, something to concentrate on” (MF013)

Unlike the participants who sat for satisfaction, these differed, in that they considered sitting as beneficial and valuable to them, much like the literature discussed earlier (Kikuchi et al., 2014; O'Neil & Dogra, 2016; Palmer et al., 2018). Therefore, sitting was considered salutogenic.

A couple of the male participants discussed activities they viewed as satisfying, noting that although they sat doing them, they were still being physically active:

“I just go into the garage and build dolls’ houses and stuff. I’m standing up or sitting down, but I’m moving all the time. I’m not just sitting there, unless it’s something small, and even then it’s exercise for the upper body, isn’t it? I might look like I’m sitting, but I’m not, because I’m using my hands” (MF010)

“I go fishing once a week, and when it’s nice I go every weekend, too. I go on a couple of socials, too, with the guys who are part of the club, a few cans of beer. It’s not sitting, because its exercise to fish – it can be hard work!” (MF005)

These participants cited the physical energy required to perform activities that entailed sitting, and they felt that engaging in such pursuits provided them with more benefits than sitting and watching the television, which they related to their general health and wellbeing. Sitting as satisfying therefore encompasses multiple stories about sitting, which is described in terms of being relaxing, enjoyable and cognitively rewarding. Distinctions between these are made above, but primarily the participants illuminate how sitting as a satisfactory activity provides some sort of benefit, whether it be in the form of relaxation, fun or physical movement.

4.2.4 MOURNFUL SITTING

Some of the participants felt that their COPD had taken over their lives and that they were now at the mercy of the disease. For these participants sitting became a way of life, which they did not associate with positive meanings. They felt they “had to” sit, as otherwise they would become too breathless or tired, and often they mourned a previous active and happy life:

“What was a happy life at one time becomes a sad life, because you’re stuck in that bloody armchair and [it] becomes your safeguard, as it were” (ME015)

“Some days, I just dread getting off the settee, because while I’m sat there I’m breathing fine. When I’ve gotta get up to do something, well, I have to build myself up for it” (FF033)

These participants did not recognise sitting as being a positive activity; rather, it was merely part of their current lives as a result of their illness.

Many participants discussed feelings of resignation:

“I sit and watch telly most of the time, ‘cause at the moment, I just can’t be bothered, can’t be bothered to get ready and can’t be bothered to make an effort anymore. I’ve sort of given up. So I just sit and watch the world go by” (FE009)

“My whole life has changed. Everything’s just gone out the window. I’ve got nothing left” (FE033)

Some participants acknowledged that the severity of their illness was preventing them from being able to cope or live; as a result, they gave in to their symptoms and allowed themselves to become resigned to their illness.

Some also discussed feelings of isolation and a general resentment about their illness, which prevented them from living a fulfilled life:

“It’s a very lonely disease, because you can’t keep up with friends, it’s impossible.

Sometimes, it’s impossible to walk, it separates you from your family, because I hold them back and so you miss out on a great deal in life. It can become very solitary”

(MF015)

Isolation and loneliness arose as common issues in these COPD participants, who felt that their illness prevented them from going out, and as a result being housebound often made them socially isolated. Those who lived alone discussed feelings of loneliness, as the illness prevented them from leaving the house and socialising with other family or friends.

All participants using home oxygen discussed how being on oxygen made them give up on many aspects of their life:

“I had to stop playing golf three years ago, and that was my life, I loved it. I can’t go away anymore, because I can’t fly now. So you just get to a certain level, and they pull the carpet from under you, leave you with nothing” (MF023)

“I’m lucky if I can get out my armchair and get to the loo and back... I can’t cook ‘cause it’s difficult with oxygen tubes hanging out your nose. What else can I do but sit in my armchair? Sometimes, I sleep there at night, because it’s near the loo and I worry about moving. Sitting is a relief to me, because I can’t fall over, I don’t turn dizzy and I’m just safe and resting. I don’t particularly enjoy it – it’s just a necessity”

(FF034)

Home oxygen was discussed as impinging on numerous aspects of the COPD individual's lives, as they felt it prevented them from leaving the house or engaging in activities they used to enjoy.

Sitting, for these mournful participants, provided a sense of security and safety not present in standing or leaving the house. Thus, as a result, the majority of these participants did not leave the house and therefore experienced feelings of loneliness and isolation. Moreover, they felt at the mercy of their disease, as hope was lost, and so many discussed how they had given up and were no longer relishing the time they had left.

4.3 DISCUSSION

These findings shed light on the variety of meanings COPD sufferers associate with sitting. These can be categorised into four themes: *not just sitting*, *sitting as enabling*, *sitting as satisfying* and *mournful sitting*. They emphasised that they were not “just” sitting, partly to deflect moral blame for an activity, which is considered potentially a sign of laziness or being unhealthy. This tendency to deflect blame by downplaying activities associated with unhealthy lifestyles has been observed by others (Greenwood-Hickman et al., 2016).

However, most importantly, this theme also underlines the fact that people with COPD saw themselves doing things that are important to them whilst sitting, which is often overlooked in research focusing on the negative consequences of sedentary behaviour.

Sitting was seen by some a way of as enabling them to perform important daily activities, by taking a break in order to recover. Qualitative studies on COPD patients have also observed the condition breaking up their activities or taking rests (Dobbels et al., 2014; Pinnock et al., 2011). Our study highlights how these breaks are explicitly involved in sitting, with participants deliberately placing seats strategically around the house to enable them to perform tasks. The activities performed were often gendered, so women would do household

chores. Williams, Bruton, Ellis-Hill, & McPherson (2007) also discussed gendered activities in patients living with COPD, as caring for the house and garden was split between males and females.

Sitting enabled the participants to do things, and some saw this as giving them a sense of independence, as observed by Leidy & Haase (1999). On the whole, our findings show that sitting not only signified a lack of activity, but importantly it also enabled patients with COPD to complete activities they would not otherwise have been able to do without resting. Many patients also discussed sitting as satisfying, and enjoyable, thereof has been observed in many studies (Greenwood-Hickman et al., 2016). Korpershoek, Vervoort, Nijssen, Trappenburg, & Schuurmans (2016), for instance, reported the importance of self-management techniques aiding in reducing exacerbation impacts, as patients who reported feelings of anxiety and fear used sitting as a technique to relax. Some felt that sitting and watching TV or socialising, for example, were satisfying, as they reduced stress levels and distracted them from their illness. Greenwood-Hickman et al. (2016) also reported that overweight older adults sat to reward themselves after a stressful or busy day; however, the importance of relaxing and keeping their minds off their illness may be particularly important for individuals with life-limiting chronic illnesses. Some associated sitting activities with keeping their minds active, such as knitting or doing puzzles, and such social and psychological benefits have also been observed in the context of older age (Mcewan et al. (2016) and O'Neil & Dogra (2015). Our findings underline the fact that whilst sitting may not be physiologically the best thing to do, it may have psychological and social benefits and help particular patients with chronic disease to cope with their illness and lives.

Some participants associated sitting with mourning for the activities they used to be able to do. They talked about feeling sad, defeated and at the mercy of their illness. Their sitting reflected this, in that they discussed feeling too ill or tired and therefore felt sitting was not a

choice but that they “had to” sit. Many discussed being lonely and isolated, because of their illness, as they missed out on activities in which family and friends still engaged. This was particularly pertinent for those individuals on oxygen. Studies have observed that COPD patients experience feelings of loss and isolation (Ek & Ternstedt (2008) and limited opportunities, particularly when on oxygen (Marx et al. 2016)) or become resigned to their condition (Pinnock et al., 2011; Marx et al., 2016). Our observations show that sitting in this context may not be experienced as positive but as something patients feel they “have to do,” due to physiological limitations and psychological resignation.

The findings of this chapter emphasise the importance of exploring the meanings behind sitting from the viewpoint of individuals with COPD. This chapter adds to current public health literature, which argues that sitting is salutogenic (Kikuchi et al., 2014), and literature which explores why people sit and their perceptions of doing so (Mcewan et al., 2016).

However, my participants differ, in that they emphasised how even passive sitting provided benefits to their lives, as this allowed them to relax and recharge their batteries. In addition, this sitting also helped them to take their minds off their illness and provided them with a sense of comfort. In a different way to Kikuchi et al. (2014), who used surveys to investigate the categories of sitting and thus adopted a quantitative methodology, I adopt a semi-structured interview approach to capture the experiences of sitting in this participant group. Both Mcewan et al. (2016) and I adopt a qualitative method to explore the context of sitting and what makes people do so, albeit by focusing on the meanings of sitting, this chapter has sought to gain an in-depth understanding of what it means to my participants in a way that allows them the freedom to discuss their lived experiences and realities with me.

CHAPTER 5 TEMPORALITIES OF ILLNESS AND SELF BY OLDER
ADULTS WITH COPD

5.1 INTRODUCTION

Following on from the previous chapter, I discuss how the seemingly innocuous or practical goal of a self-tracker, designed to break up and reduce sitting time, alters temporality. Taking a lead from this observation, this chapter explores how the LUMO's stated aim of altering temporality interacted with the temporalities of older adults with COPD who were wearing it. In addition, I explain how the previous chapter, which explored the meanings of sitting, uncovered how sitting and self-tracking use are related to the experiences of time and the rhythms and pace of everyday life.

I draw on the rhythms and temporality framework to make sense of this notion, as temporality is relevant to the experiences of chronically ill older adults in a broader way than ascertained by the fairly immediate goals of the LUMO (Pierret, 2001), which emerged in our study. Studies into temporality and chronic illness have noted that chronic illness is a major disruption to everyday temporalities. Morris (2008) argues that those living with a chronic illness are often trapped inside what he calls a "provisional time," whereby they look forward to their next dosage of tablets or their next appointment with a GP. A chronic illness therefore interrupts what Strauss and Corbin call "biographical time" (Corbin & Strauss, 1987), namely the way in which an individual locates herself in and inhabits time by being, for example, inclined to focus more on looking back on personal history than forward towards an anticipated future. The broader biographical time, it will be argued, will shape the way in which individuals interact with LUMO, which is designed to intersect time in the present.

To interpret the temporal dimension of the more immediate goal of LUMO, i.e. to interrupt sitting time, it is useful to draw on Lefebvre's notion of rhythms (Lefebvre, 2004), which refers to a repetitive, recurrent pulse of everyday life, ranging from rhythms of the traffic in a city, to the biological rhythms of breathing and sleeping. Rhythmicity is pertinent to the goal of breaking up sitting time, as this aim seeks to interrupt habitual rhythms and interacts with other rhythms, such as breathing and breathlessness.

In what follows, the nature and pertinence of biographical time making sense of the interaction between a device, to break up sitting time, and older adults with COPD will be discussed. I then move on to discuss how Lefebvre's conception of rhythms helps to unravel the interaction between the self-tracker, sitting less often and the participants' everyday habitual lives. To conclude the conceptual introduction, I examine how the self-tracker can be seen as a machine, similar to but also different from the clock, which seeks to discipline time. The framework will be used to make sense of the cases of three participants' interactions with the self-tracking device, which illustrate different ways in which biographical time, rhythms and the self-tracking device interact together and affect self-tracking and sitting less often.

5.2 TEMPORALITIES AND SELF-TRACKING

5.2.1 BIOGRAPHY AND COPD TIME

The broad contexts of biographical time and chronic disease in the participants' lives pre-exist the self-tracking intervention but nevertheless play an important role in the shaping of how the tracker fits in with their lives. First, the participants in this study were all chronically ill older adults, thus affecting the temporality of their lives on a broader scale; however, this varied from person to person, as each participant was at a different stage with their illness and had a different way of experiencing it. Some participants were mournful of their lives and

thus spent a lot of time looking into their past, while others were more future-oriented, positive and hopeful.

As noted by Adam (1990, 1995), the experience of time is context-dependent, with the past, present and future being the key dimensions in this respect. Whilst we tend to think little about time as we move about our lives, it seems to be context- and person-dependent, as a 70-year-old man's experience of time will differ from that of a young woman's (Adam, 1990). Moreover, time has a meaning exclusive to each person, whereby it is linked to personal circumstances and context (Adam, 1995). *Temporality* is the relationship we have with time and refers to the central dimension of existence, the memory we have of our past, present and potential futures and the identity of ourselves now and before (Adam, 1995).

Corbin and Strauss talk about temporality in terms of biographical time, which they see as a split between past and future over the course of a person's life (1987, p253). In this way, the COPD patients live inside a life course temporality, which is reflected in how they experience time in the present, because of their illness and age and how they anticipate their potential futures. Whilst some may have a positive outlook on their futures, hoping for a speedy recovery or planning on improving their lives and health, many are mournful of their current situation. Cresswell (2015) discusses how this often slows down our own mobility, which he refers to as "friction" (p109). In addition, Crossley (2000) believes that when time is experienced as unfulfilling, people cease to have hopes or aspirations for their future. In this way, he argues that people tend not to make plans, because they are afraid of letting others down or self-disappointment, thereby leaving them with very little meaning in their lives. Pinnock et al.'s (2011) study, which looked at the perspectives of COPD patients as their illness progressed, found that they had little sense of their biographical disruption, as they were unable to differentiate between that and what they considered normality. The patients

talked about resigning themselves to the illness and no longer fighting it, with some accepting it and attempting to cope as best as possible.

Central to this notion of biographical time are memories. The ability to re-encounter past happy memories is considered important, especially for those who categorise themselves as having empty lives (Phoenix, Smith, & Sparkes, 2007, p244). Human body rhythms are complex, especially where a chronic illness is concerned, given the finite time of the clock and the unpredictable nature of the illness. Adam (1995) also stresses the importance of appreciating “body time,” and adapting to the new rhythms of our body and the environment. She outlines how conceptions of time are often linked to our health and uses the example of a cancer patient who “can’t generalise time anymore.” She posits that for a person facing death, time has a new meaning, in that it is no longer taken for granted and the past, present and future are significant in preparing for death. These observations highlight how each person inhabits an illness and experiences time at different stages of their illness in potentially different ways. I will untangle how these biographical and illness-related temporalities affect the way in which individuals interact with a time-intersecting device.

As discussed, temporality assists in exploring e experiences with time and the ways in which a chronic illness may influence this factor. The addition of rhythms helps to look at time through everyday life habits and routines, which are dictated by the speed and intensity of pace. I use these two concepts together to help understand the complexity of time and how this affects sitting and self-tracking.

5.2.2 RHYTHMS OF CHRONIC ILLNESS

Rhythmanalysis is used to analyse the performance of rhythms in everyday life (Lefebvre, 2004). Lefebvre was concerned with the everyday and felt that “everywhere that there is interaction between place, a time and an expenditure of energy, there is rhythm” (2004 pxv).

Furthermore, he noted that rhythm is inseparable to understanding time and pointed out that whilst rhythms appear natural and spontaneous, they always have a measure (p.8). He identified different types of repetition relating to the participant group in this chapter.

Biographical rhythms refer to activities such as sleeping and eating, and they are affected by the introduction of a chronic illness that seeks to interrupt these rhythms and fragment our timetables. In a similar way, the cyclic rhythms of day and night are often fragmented by illness, which commands day and night and prevents us from engaging in a normal cyclic rhythm. Lastly, linear rhythms, with a beginning and an end, are often referred to when discussing life and death and are therefore important for the chronically ill.

Lefebvre also discusses polyrhythmia, eurhythmia and arrhythmia to illustrate how different rhythms entwine. Polyrhythmia refers to multiple interrelated rhythms coming together; for example, the rhythm of a car is dependent on the rhythms of traffic. This demonstrates that our rhythms are not inseparable but are environmentally- and context-dependent, changing to suit a situation and becoming environmentally synchronised to react to seasonal and other changes. As such, they are therefore often temporary. Arrhythmia refers to the collision or disruption between two or more existing rhythms; for example, the COPD participants experienced disruptions to their rhythms because of their chronic illness, including symptoms of breathlessness and fatigue. Finally, eurhythmia is a constructive or harmonious interaction between rhythms, i.e. they become synchronised, or new rhythms are created in order to synchronise rhythms. A number of COPD participants experienced eurhythmia when their symptoms improved and they were able to engage in more activity with fewer disruptions, and in which case they classified themselves as healthier than before.

Rhythms therefore help to navigate through time and occur at a variety of speeds and intensities (Adam, 1990); furthermore, how we navigate through our lives contributes to our rhythmic cycles. Rhythms involve both activity and rest alterations, and for humans they

include the processes of eating, sleeping, using energy, thinking, concentrating and communicating, and we only become aware of our rhythms when they are interrupted, for example when our normal routine of walking the dog to the park is interrupted by a lack of access to a specific park. Activity and rest form part of our rhythms, in that the meanings of our rest period become fundamental to the interruptions of our rhythm (Adam, 1995, p45). Moreover, the rhythmic organisations of our body begin to change following the introduction of an illness: the elements of speed, sequencing, timing, temporality, intensity, spacing, pacing and prioritising all alter accordingly, in order to adopt to the new rhythm of the body (Adam, 1995, p51). The once taken-for-granted routines of our lives such as getting up, breaking, working and catching a bus, all begin to need our conscious attention. For the participants herein, their bodily rhythms often cause fatigue and breathlessness, which interrupt their routines and cause them to take breaks or rest for set periods of time.

Giddens (1979, p199) emphasises the importance of stability, sequence and order in temporal organisation, noting that a stable order would be one where there is a similarity between what was before and what is now. He identifies the importance of flow in our day-to-day routines, whereby the tasks and chores we perform are integral to the concept of *habitual time*.

Additionally, he sees the routine aspects of our lives, such as working, cooking and washing up, as simultaneous in both our past and our future. Giddens suggests that for the majority, events reoccur and are in order when humans direct their lives through the habits of their everyday lives, as time is constructed through the “repetition of day-to-day living.” For Giddens, repetition provides security because of its sameness; however, Adam (1990) points out that some experiences are unrepeatable or are not quite the same as before, and therefore no routine is quite ever identical to the previous time, to which Lefebvre refers to as the “measure of difference” (Lefebvre, 2004).

The notion of rhythm offers a useful concept through which to make sense of the multiple recurrent rhythms that converge in chronically ill older adults' efforts to sit less often, such as habitual routines, biological rhythms and how these may be more or less in synchronisation with each other and the exigencies of the self-tracking device.

5.2.3 LUMO TIME

Research has discussed how digital media brings with it numerous alterations related to time, such as how we organise it, how we integrate media into our time and how time may be disrupted. In our modern-day lives, time has become related to speed and immediacy, all intensified by the emergence of digital technologies (McQuire, 1998, pp.185-187).

Kaur, Saukko, & Lumsden (2017) contend that different rhythms of media use exist.

Therefore, instead of concentrating on the speed and immediacy that modern technologies seek to provide, a multi-focused approach is needed that provides a way of exploring the various ranges of temporality available to us in modernity (Keightley, 2012). This includes looking further than speed and more toward other temporal frames such as memory and duration, and how media can contribute to these timescapes.

In our study, participants were asked to wear a self-tracker (LUMO) that would quantify their sitting and their time and seek to interrupt their normal rhythms. The self-tracker sent vibrational prompts to the participants when they had been seated for set periods or prolonged amounts of time, encouraging them to stand up, thus interrupting their everyday rhythms. This tracker quantified the participants' sitting time by informing them via an iPod touch how long they had sat, stood and walked.

The self-tracker thus seeks to alter temporality, and one could say that it seeks to discipline its user's time. Lash and Urry (Green, 2002; Lash & Urry, 1994) used the term *clock time* to refer to orientated and disciplined time. They saw the term as pertinent for basing activities

around, and so they described it as “the synthesized measure of life” (Green, 2002).

Sociologists place emphasis on clock time as the standardised form of time. Clock time has become our integral source of time, controlling our timing, rhythms and the temporality of our lives. Whilst the mediated time of LUMO is different from that of clock time, LUMO functions in a similar way, in that it seeks to change the meaning of time and discipline it accordingly.

Throughout the day, the self-tracker is designed to break up sitting by vibrating on the participants to remind them to stand up, thus changing their meaning of time and potentially interrupting their rhythms. Lefebvre’s (2004) polyrhythmia and arrhythmia are relevant when participants’ rhythms are disturbed by the buzz of the tracker and are too ill and breathless to move, or they do not consider moving as meaningful in that particular moment. The self-tracker may buzz during their habitual rhythms, thereby interrupting their flow and causing arrhythmia. The participants may change their routines in order to adapt to the addition on a new form of mediated time. New rhythms may be developed in order to prevent disruption, thus demonstrating eurhythmia, where the tracker exists in harmony with other rhythms.

Furthermore, the self-tracker and its interjections exist in the broader context of biographical time, and the way in which individuals interact with it, as we shall see, is also related to the more fundamental temporality or temporal directions of their lives.

5.2.3 QUANTIFIED TIME

First invented by two *Wired* journalists, the term ‘quantified self’ has come to be used to refer to self-tracking or life-logging practices (Lupton, 2014d). Lupton refers to quantification as “the practising of gathering data for oneself on a regular basis and then recording and analysing the data to produce statistics and other data relating to regular habits, behaviours and feelings” (2014a, p1). Many devices placed upon the body now automatically collect data

on bodily functions such as heart rate, sleep, calories and steps. The self-tracker collects data on the person's sitting and standing time, as well as their steps and lying time. These data can be accessed and analysed on the tracker's application, which details the percentage of time the person has stood and sat, for example, and this can be looked at on a daily, weekly or monthly basis to compare data across time sets.

The culture of self-tracking and quantification has usually been discussed in terms of how it changes behaviour, but the ways in which the devices, such as the self-tracker, quantify time also alter temporalities. The bodily functions being tracked become quantified, and so our daily timetables and plans may change to incorporate this monitoring. In addition, the device may reduce some times and add to others; for example, LUMO quantifies sitting, so whilst I may normally watch television seated for five hours, I may reduce this to three hours. The quantifying devices may also alter temporality in terms of orientation. In the literature on quantified self, it is often debated how individuals look back on the data collected on themselves, tracking past trends (Gilmore, 2015; Sellen, Whittaker, & Sellen, 2010). However, the devices may also work in terms of the future, so that a person may, for instance, plan their daily eating based on certain amounts of calories at specific intervals (Didžiokaitė, Saukko, & Greiffenhagen, 2018a).

In a similar way, if I observe that I have only taken 1,000 steps today, I may plan to take 2,000 tomorrow to make up for it. Lupton (2014b) argues that the datasets that are collected play an important role in shaping an individual and their everyday lives. However, numbers alone are not enough for individual behaviour to change; in reality, it is how we attribute meaning to them that is important. In this way, observing the quantification element of LUMO will be useful for exploring changes in temporality. Furthermore, it will also be important to observe absences, instances or participants who did not engage in this act of quantification and for what reasons. Wyatt (2003) recognises non-use as much more than

“dropouts” and states that establishing why such people leave or do not engage is just as important as knowing why somebody does not leave and does engage. Wyatt establishes different types of non-user and makes apparent the importance of identifying between passive (too poorly, technologically unable) and active (voluntarily, i.e. don’t want to, don’t find it useful) non-use.

Key to applying this conceptual framework to my own analysis is the way time is embedded in day-to-day life. A number of different temporalities exist, from the personal to the institutional, and whilst some existed before the self-tracker, new socially constructed times may appear as a result of the tracker.

Against this backdrop, it is interesting to work out how different temporalities and rhythms come into play when older adults with COPD interact with a self-tracking device for sitting time. As already said, the self-tracking literature usually focuses on behaviour, but it has been explored rarely how this is related to temporality in the context of new machines that seek to alter both. This is what I seek to establish.

5.3 METHODOLOGY

This chapter is based on results from interviews that were conducted as part of a feasibility trial seeking to reduce sedentary behaviour in COPD patients who had been hospitalised following an acute exacerbation (for the protocol see Orme et al., 2016). The participants were involved in two interviews each, namely an initial interview and a follow up or a dropout interview. This chapter focuses primarily on the second interviews, which were conducted after the participants’ two-week intervention. However, the analysis also makes use of the first interviews, to draw out comparisons and information about the participants’ life contexts. An interview guide was developed for both interviews 1 and 2 amongst the

research team. Whilst the first interviews concentrated on the participants' daily lives, good and bad days and their thoughts on sitting, the follow-up was concerned with how they had managed the interview, if habits had been changed, if and how they used the self-tracking technology and/or leaflet given to them and if and how they responded to the vibrational prompts of the technology to stand up. Dropout interviews were conducted with those who left the study before the two-week endpoint, and they were asked their reason for withdrawal, if we could have changed anything and what their life was like at the time of leaving. This chapter examines the participants' responses to the self-tracking technology. Interviews were analysed thematically, using constant comparison.

The analysis focused on temporalities and rhythms and how time changed for the participants with the addition of the self-tracker into their normal daily lives.

The following section presents extracts from three participants' interviews, which relate to the broader idea of temporality and time. The three case studies were selected to demonstrate the different responses to the self-tracking device, and therefore they reflect the various ways in which biographical time, rhythms and the self-tracking device entwined.

The three case studies will be discussed in detail in relation to biographical and rhythmic time and how time the addition of the self-tracker intersected their existing temporality.

5.4 ANALYSIS

The three cases selected reflect the three common responses to the self-tracker: engaging when it suited the participant, not engaging (too poorly) and changing habits. I present these three case studies to reflect the broader categories of responses; therefore I refer to the three common and general responses to the self-tracker device and use these as examples of the category referred to.

The first case study involved Steve, who engaged with the device when it fitted in with his routines, and ignored it when it did not do so. Steve represents the participants who engaged with the device when it fitted in with their routines and lives, for example, those who got up when they already planned to, or scheduled chores in around the vibration reminder. The second case study focuses on Ann (who was the most severe COPD patient in the study), who was too poorly to engage with the device and dropped out of the study. She therefore represents those participants who were the most chronically affected by their illness and who found the self-tracker difficult to engage with because of this. Some of these participants may have not responded to the device when it vibrated because they were having a bad day and thus needed to rest or were experiencing more breathlessness than usual. Finally, Barbara's case is presented, which focuses on the small changes she made to her normal daily life as a result of the device she was given. She represents the minority of participants, those who engaged with the device and tried to fit it in with their lives in order to make positive change. I refer to Steve, Ann's and Barbara's stories as reflective of the wider participants stories and discuss their stories in detail below.

5.4.1 STEVE AND HIS HABITUAL ROUTINES

5.4.1.1 BIOGRAPHICAL TEMPORALITY

Steve is a 65-year-old retired lorry driver. He retired early at 55, due to his COPD, and stresses how important his job was to him: "*I miss it sometimes. I was doing it for 38 years, it was routine.*" He reminisces about a routine he once had, and he looks back upon his work life and is slightly sad because he can no longer do it. Corbin and Strausse (1987, p253) detail the importance of looking back and anticipating potential futures for chronically ill individuals. Steve admits that currently he is only functioning at 75% of his 'normal' self, following his exacerbation, but he expects to recover "*within a few more weeks.*" He looks

ahead at his anticipated future and feels that the current situation of his deteriorated health is temporary, a state of arrhythmia, as he anticipates a full recovery to his former pre-exacerbation self. Steve admits that his recent exacerbation has affected the speed of his movement and his activities, and he says he is “*as active as [he] can be*” and considers himself to be “*trying [his] best*” during the two-week study period. Cresswell (2015) refers to this force, which slows down mobility, as “friction” (p109).

Similar to the participants in Pinnock et al.’s. (2011) study, Steve also discusses his COPD as something that nothing could be done about: “*It is what it is.*” He has resigned himself to his illness, accepting it for what it is and is trying to adapt his normal daily life around his COPD.

For Steve, his biographical time includes looking back on past times with a level of fondness and also includes looking forward to an anticipated future where he imagines he will be able to function more normally. Taking part in the study is part of Steve’s plan to get back to normal, and get over his exacerbation, which is essential for his motivation.

In order for Steve to continue living what he considers a *normal life*, he takes his dog out at least once a day and tries to continue with his hobby of doing up dolls’ houses. However, his bodily rhythms often get in the way and force him to take breaks during activities, to enable him to continue with them as a result of his breathlessness: “*Missus does the ironing, and I take it upstairs, put it into piles... by the time I get upstairs, I have to sit down on the bed because...well, it’s quite an effort, you know, at the moment... it’s making your lungs work, or what little lung I have left.*”

Steve has adopted a habitual rhythm when he walks his dog of leaving the house, walking for 10 minutes, breaking and then walking, where breaking has become repetitive for Steve and

his dog: *“I don’t rush, I go walk round, slow walk stop, start, stop, start, get up the road, sit in a seat and then walk round again.”*

Steve says he is determined to keep up his dog-walking unless really unable, which is an example of polyrhythmia (Lefebvre, 2004, p6) between Steve and his dog. Giddens (1979, p199) identifies repetition as important for individuals, as it provides us with security. Steve admits feeling low in mood when he is too unwell to take the dog, as he dislikes having to ask his wife to help. For Steve, taking the dog for a walk provides security, a comforting routine and proof that his health is good enough to do this task. His reliance on breaks, to sit or to lean on a wall, on allows him to walk his dog, even if they intersect his walk. Steve and his wife sometimes recognise he is struggling when he is unable to perform his normal daily activities:

“I’ll only ask the missus to take him if I’m really bad, and if I ask she knows I’m bad ‘cause normally, as long as I can sit on somebody’s wall and rest or find a bench, I’ll go.”

Steve also mentions having naps or reading the paper in the afternoon, which he does sitting in his comfy chair and cuddling up with his dog: *“I’ll lay on the seat, bring the chair up and the dog will jump up here and he’ll go sleep on my armchair, and I’ll have a nap too or might read the paper.”* This is part of his habitual rhythms, but he admits experiencing friction, as aspects of his life have slowed down, he sums this up by saying *“It’s like the old saying, slowly slowly catch the monkey.”* However, Steve considers himself to listen to the rhythms of his body, stating that his afternoon naps are merely a way of him recuperating: *“All I’m doing is charging my batteries up,”* therefore he considers these naps inevitable because of the friction he experiences.

Steve discusses how he is used to routine, since he was always up early for work and didn’t want to lose this momentum of getting up for a purpose: *“It took me, like, 9-12 months to get*

used to not working. I mean, my working day started at half past three in the morning and then I'd come home by six and be back in bed by half nine and then up again at two. So to get out of that, it took me ages... I needed something to get up for."

He has a fairly set routine, getting up in the mornings, having breakfast and a drink with the wife, brushing the dogs, walking the dogs, "get my jobs done" (DIY, dolls' house) and then sitting and watching television in the afternoons with the dog, which usually results in a nap. His wife then returns from work and they eat after he has helped cook. Steve feels in a low mood when he cannot do these things:

"It's an effort to do things on bad days, but I still get up and try. I do a little bit, but I just have to sit down more and relax, you know, sit down and just slow the metabolism down breathing, but I hate it, I like to be doing something. It can get you down sometimes."

5.4.1.2 INTERCEPTED RHYTHMS

Steve was motivated to use the LUMO, as he felt it would actively help with his recovery process. He responded to the buzz of LUMO when it fitted in with his normal day and when it synchronised with the other rhythms at play at this time.

He discussed how LUMO often prompted him to take the dog out, which he did anyway. He felt the buzz and thought that it would be a good opportunity to take the dogs for their walk, thus interweaving the LUMO into his normal daily rhythms. Whilst technology does not always successfully intertwine itself into individuals' daily lives, Steve felt that the vibration acted as an incentive: *"It does give you a sense of purpose; I mean, I had to take them [the dogs] out anyway."*

Green (2002) argues that the interweaving of mobile time (the LUMO in this instance) is usually dependent on other time-based social practices, and so for Steve it was based largely on whether it disrupted his habitual time. He acknowledged that he did appropriate LUMO into his everyday life when it suited, but he chose not to do so when it did not. Whilst Steve did respond to the LUMO if it buzzed him near his dog-walking time, he also chose to ignore it during his afternoon nap: *"I felt the thing [LUMO] buzz on my back, but because I had the dog laying across my legs at that moment, I thought, well, that's it, I ain't bloody moving then."* Steve recalls ignoring the LUMO when he was sat in his comfy chair watching television and falling asleep with his dog napping on his lap. During this period, the buzz of LUMO interrupted his habitual time of relaxing with the dog, and thus getting up was not something he wanted to do.

5.4.1.3 QUANTIFIED TIME

The LUMO changed Steve's daily cycle on occasions, as he looked at the application on the iPod to measure how his day was going. He discussed that on some occasions he wanted to

increase his step count after realising that he had not done many steps that day: *“I looked at the app and thought I hadn’t done many steps, so I took the dogs out again that afternoon.”*

This was significant to Steve, who added an extra walk into his normal day in order to increase his step count, thus adjusting his normal day and accruing time.

Steve’s account demonstrates how he engaged with the self-tracker when it fitted in with his existing habitual rhythms, getting up when it was valuable and beneficial for him. The self-tracker did not intercept his time, as getting up only occurred when already part of his existing routine. Steve experienced interruptions to his biological rhythms when his breathlessness caused them to disengage with existing habitual rhythms and ask his wife to help. His account demonstrates how the self-tracker and sitting less agenda were only integrated when meaningful to him, which suggests that the habitual rhythms of his life were considered more important.

5.4.2 ANN’S FRAGMENTED TIMETABLE

5.4.2.1 BIOGRAPHICAL TEMPORALITY

Ann is a 69-year-old woman who relies on both her scooter and her concentrator oxygen. She has resigned herself to her illness, giving up on habitual rhythms and any sense of a daily routine: *“I don’t get dressed anymore unless I’m going out, but once upon a time I’d have never done that – I would have cared more.”* She reminisces about her past a lot, talking about how she used to live and the activities she used to do. She looks back upon her memories:

“My family is in London: my siblings, my family house, all in London, well a little village just outside London, between Hammersmith and Richmond. I used to go regularly when I was driving, but I don’t drive anymore because I have to have oxygen all the time, and also I can’t afford to run the car. I miss it!”

Ann is mournful of her current life and dwells on what she is missing out on in her present life; *“I used to do everything, all the cooking and cleaning, the gardening and decorating. Now look at me, stuck in this seat hardly able to breathe at all.”*

Ann talks about all the things she used to do and enjoyed before the illness took them away from her. She spends a lot of the interview talking about the past, reminiscing about a more active and happy life. She discusses plans that she has not been able to keep to, which are reminders of her illness and incapability:

“It was her [granddaughter] first holy communion last Saturday, and I couldn’t go, and it really upset me, but I just couldn’t manage it. I had some flowers delivered, but it’s not the same; I wanted to be there. She must have felt really grown up and special, and I missed it.”

Ann cannot live without her oxygen or leave the house unless she is on her scooter: *“I rely on my oxygen now, so I can’t do much on my own like I used to. I was always up and doing something before, but it’s just a different life now.”* Bury (1982) highlights how biographical time often takes over in a chronic illness, as simple outings became reliant on planning. This is evident for Ann, who is forced to either pre-plan leaving the house or stay at home. This often results in social isolation or high dependency on others (Bury, 1982). Ann lives alone in a bungalow and is dependent on her carers visiting her up to four times a day, as she can no longer take care of herself and her bungalow, because of her COPD. She explains how her exacerbation has made her even more housebound: *“Before, I would go in the garden maybe once a day, as fresh air is good, and even if I can’t garden anymore, I like sitting out there. But at the moment I’m too scared to even move from my chair.”*

5.4.2.2 RHYTHMS

Ann’s life exhibits friction, in that slowing down is making mobility harder for her. Whilst Steve also experienced friction, Ann’s has resulted in her body no longer allowing her to

continue to do things she was once able to do. She considers her better days to be “*nothing bad happening,*” when she tends to spend the majority of her time sat in her armchair and watching television or reading, if she can manage to concentrate long enough. She refers to her past self and compares it to the woman she is today: “*It’s not me. I was never this down or inactive. I feel like a different person these days.*” Her rhythms have slowed down, making her unable to do anything without her breathlessness and fatigue taking over.

Unlike Steve, who follows a daily routine, Ann does not have a routine, and so the addition of her exacerbation has worsened this situation. Most days, Ann wakes up and eats breakfast and then spends the rest of the day sat watching television and sometimes reading. Her day depends largely on her carers: “*They do little jobs round the bungalow like fix food, do the dishes, make my bed. They do change the bed for me once a week, only because I insist. Like I said, I have a shower and wash my hair once a week, and they have to help me with that, too.*” Ann relies on her carers to set her day for her, but she chooses not to get dressed most days, thus interfering with the cyclic rhythms of day and night (Lefebvre, 2004). This is in contrast to Steve, who starts his day by getting up and having coffee and breakfast with his wife.

Ann discusses how her exacerbation forced her to sleep in her armchair, which she considers her safe place:

“I’ve had to sit all day, as I feel safest in my armchair. At the moment, I sleep there at night because I have to sit up more and it’s near to the loo, and I worry about moving at times, so if I’m tired and comfy I’ll just sleep there. My bedroom is down near the other end of the bungalow, which for me is quite a walk.”

Ann’s life is disrupted by the fragmentation of her normal rhythms. She does not get dressed in the morning and does not sleep in a bed at night, and therefore she has no recognition of

the cyclic rhythms of day and night. Her account demonstrates how the severity of her illness has destroyed her timetable.

5.4.2.3 INTERCEPTING RHYTHMS

Like Steve, Ann thought the LUMO would help her get back on track. However, this did not happen. She struggled with the device, explaining how it was “*just too much to cope with.*” She was struggling with even the smallest of tasks, and therefore LUMO did not fit in with her current life:

“I tried to concentrate on it but I couldn’t really manage, and all the stuff that you had to put on was just too much. I couldn’t focus on trying to move, because I can’t really do anything without sitting. I had to use my oxygen more and just got frustrated with it all really, so I gave up trying.”

Ann could not change her daily rhythms to allow LUMO to fit in, as she did not have any pre-existing routines beforehand like Steve, and so she was unable to bring forward or add in new activities like Steve did with his dog-walking.

Ann resigned herself to her illness and continued to sit in her chair, as she felt it was her safety zone: “*My chair was the safest place for me, I didn’t want to move.*” She explained how she was on continuous oxygen since the exacerbation, making her existing rhythms even slower than before. Slowing down was an unintentional act for Ann, who during her first interview wanted LUMO to help her get better following the exacerbation.

As discussed, she felt the need to sleep in her armchair every night after being discharged. Her pre-existing timetable collapsed, as she had to sleep more in order to catch up on the sleep she was not getting at night: “*I’ve been sleeping a lot more, even during the day. I’d wake up sometimes and wonder where the day had gone.*”

Ann, unlike Steve, rarely looks forward to her anticipated future; instead, she talks about her embodied self as being different than in her past life. She reflects on herself as being a happy, sociable and fairly active individual, all of which she now does not recognise in herself. She was eager to try the LUMO at home, as she felt it may encourage her to do more, but she admitted that her use of it would be slow: *“I should go for it now; even if it’s a tiny step at a time, it’s still forward.”*

However, whilst she wanted to break up her sedentary time, she felt that her body rhythms would not allow her to do so. Additionally, she was very slow in engaging in any activity, including getting herself to the toilet, and felt that she had to let her body adjust to the recent events: *“I had to get used to all this. I had just come out of hospital and I really wasn’t coping. I knew things were getting worse, but I think after this I realised things wouldn’t get better.”* Ann’s conceptualisation of her life course time was that it was running out, and she discusses preparing for this eventuality, even suggesting that currently it would be easier: *“Sometimes, I wish I had more time to spend with them [grandkids], and then other times, like now, I think death would be easier.”* She is torn between wishing to speed time up, and her life ending, and wishing to go back in time, as she could do more and was happier. This mindset differs to Steve, who spends the majority of his time looking forward and planning for the future. Instead, Ann talks to me about her past, her happy memories and her life beyond COPD: *“I would have been able to do it [referring to LUMO] once. I was always fairly active. Always on the go... I used to have the grandkids all the time. They used to love to stay at mine. We built castles and dens.”* For Ann, LUMO became a reminder of how her chronic illness had changed her and her life, and as such, she was disappointed with her engagement with the device, as it complicated her rhythms further and acted as a constant reminder that she was not getting any better and that she was unable to use it to help her get better.

5.4.2.4 QUANTIFIED TIME

Ann was unable to engage with LUMO, a decision she came to after she realised her body rhythms would not allow her to do so. She realised her rhythms had slowed down further, making the LUMO too difficult to concentrate on and engage with: *“I felt like I was never going to get better, I couldn’t manage it; I wanted to, but I couldn’t.”* Ann is an example of Wyatt’s (2003) passive non-user. She intended to engage with LUMO but her body did not allow her to do so, forcing her to drop out of the study: *“I tried my best but I just couldn’t do it, I’m sorry for letting you down.”* She was forced to become a non-user because of her inability to cope with the device alongside her chronic illness.

Ann’s account demonstrates how biographical temporality underpinned her life. She discusses her past and reminisced about better days, when she was able to look after herself and engage in more activity out of the house. Her current life is dictated by her illness, her rhythms’ slow pace and the lack of any routine. Her life does not follow a cyclic rhythm, as she does not get dressed in the morning and sleeps in her armchair at night, and so she has no concept of day and night. Her account therefore demonstrates how the severity of her illness has fragmented her identity and her life, resulting in her dropping out of the study, as she was unable to sit less often or engage with the self-tracker.

5.4.3 BARBARA’S STRIVE FOR EUTHYMIA

5.4.3.1 BIOGRAPHICAL TEMPORALITY

Barbara is a 72-year-old separated woman who lives alone in a bungalow. She considers herself a religious person, something she emphasises when discussing her separation from her husband: *“No, we’re not together [husband] anymore, but you don’t want to know about that, but when you get married and you’re religious, see, you only have one partner, so I live on*

my own now.” Furthermore, Barbara notes that *“I’m too old to get married again now, aren’t I? And I wouldn’t want the hassle!”* thus identifying with her life course time and suggesting she is maybe too old to re-marry.

Barbara has a positive outlook on her life, when she reminisces about the past and when she discusses her anticipated future. She often gets upset recalling her past memories, but she considers them happy ones that she enjoys looking back on: *“I mustn’t cry... I’m just so proud of my boys [sons].”* When discussing her future, Barbara, like Steve, has a positive outlook, in that she is motivated to do more and get better following her exacerbation. Like both Steve and Ann, Barbara feels that the self-tracker would help her achieve this aim, i.e. getting her back on track: *“I get lost in my book, but with this [self-tracker], well, I won’t ‘cause I’ll get up and go to the toilet, or just get up and go an’ visit Lil, something that takes my attention. I mean, I don’t sit forever and ever, but I think I need to do more.”*

Barbara is always on the go, wishing to make changes to her life in order for her to manage her COPD. She discusses previous changes she has made, such as moving to a bungalow. Following this, Barbara explains the changes she intends to make following her discharge: *“I’m going to change my way, I’m not going to be so finicky. I won’t be able to do it I don’t think, do you? I can’t do two large activities in the same day... the laundry and going shopping. I couldn’t do both. That is too much, and I have done it and it’s totally done my joints in and done everything in. I need to look after myself better.”*

She recognises that her chronic illness has changed her mobility, and therefore explains how altering her time will help her manage better. Her pre-planning mentality differs to that of the other two case studies. Rather than eliminating activities altogether, like Ann, who felt she was unable to get out in the garden or leave the house at all, Barbara feels that adopting previous activities will still allow her to perform them: *“I’ve worked out a plan where I’m not*

doing as much, so no more standing in the cold at the bus stop; I can get taxis, you see, for shopping and what have you.”

5.4.3.2 RHYTHMS

Barbara has a much faster pace than the other cases, and she describes herself as *“unable to sit down for long.”* She also acknowledges that sometimes her body rhythms take over, causing her to get breathless, and during this time she sits to control the symptoms: *“I stop what I’m doing and use my Ventolin. Sometimes, I need to sit and have a rest, and then I get back up and carry on.”*

Barbara has a very set routine, so each day she follows the same habitual rhythm, namely getting up, praying, taking her tablets with a coffee and dusting the flat. She says: *“I like to get some work done in the morning and then sit down and get my book and have my porridge, which is good for you, you see.”* She is very conscious of her health, trying to make active decisions in terms of being healthier. She explains how in the afternoon she likes to get out of the house, either shopping or doing the laundry, or taking a walk around book shops and then returns home and cooks before relaxing (reading, watching a film) in the evenings:

“I make my own meals. I’m not a gourmet cook, but I can put the oven on and I always try to eat something good for me. It’s important, isn’t it, especially for someone like me.” Barbara acknowledges the importance of taking care of herself because of her chronic illness, and therefore she routinely eats well and tries to take a break from her bungalow.

She discusses how her habitual rhythms vanished following her exacerbation, as she was unable to perform her normal routine: *“When I’m bad, I have Deirdre [sister] to help, and she’s great. I knew I was bad before I came here because I need her much more than normal, and I did feel bad ringing her all the time.”* Barbara describes a state of arrhythmia, as she realised she was really ill when her normal rhythms were disturbed by the illness, which in

turn disrupted her normal daily routines. Like Steve, Barbara explains how friction has slowed down her normality and made everyday activities harder to perform. Both Barbara and Steve acknowledge the usefulness of having extra help during this time: for Steve it was his wife, and for Barbara it was her sister. For Ann, this was not possible, given she lives alone, but she often called upon her carers to help her when possible.

5.4.3.3 INTERCEPTED RHYTHMS

Barbara discussed how she replaced time, changing her previous activities to enable the self-tracker to interject in her normal daily life: *“I thought right, well, I can walk round saying it [my prayers] instead of sitting, so I did and walked round, ‘cause there’s only one floor.”* For Barbara, LUMO was non-disruptive, given that she found a state of eurhythmia, balancing her previous life with LUMO in a harmonious way. Unlike Steve, who moved his activities forward, such as dog-walking, to enable the tracker to fit in with his day, Barbara added new routines into her life. In their intervention study, Matei et al. (2015) found that several of their participants also adopted new habits, such as going shopping fewer times a week to mean that they would have to carry a heavy shopping load. Like Barbara, who says, *“I’ve got very used to it, so I’ll think, ‘I’m getting up now, remember LUMO would tell you to get up’,”* the participants reported that these new habits became automatic and part of their daily routines, without the need for reminders (p11).

Barbara extended this notion to explain how she tried to get up before the buzzer prompted her to do so: *“It was quite funny really, because I was always aware that I was going to stand up before he told me I had to. I tried to beat him.”*

Barbara felt it was a great motivational tool for her to improve her life and get back on track again following her exacerbation. Unlike Steve, she always reacted to the tracker, even if it disturbed an existing activity. She explains how she was watching television and got carried

away, when the LUMO buzzed her to get up: *“I got carried away, it just zapped me and I thought I better get moving again.”*

Whilst Barbara did replace time to allow the tracker to co-exist in her normal daily life, she was still aware of her illness, since she often had to take it easy, which included taking regular breaks. However, she discussed how she became conscious of sitting down too much and how the self-tracker became a reminder for her to get up without the need for the vibrational prompt:

“I’d think, ‘Ooo, I’ve been sitting here too long now, I must get up’ – and I did, I did. I did that. I did it every time. I thought, ‘No, I’m not going to be buzzed, I’m going to get up. So that’s now, I think that’s ingrained in me now, I think I will. I think I’ll think if LUMO was here, I’d be getting up now.”

5.4.3.4 QUANTIFIED TIME

Barbara used the self-tracker to quantify her time, which she did by taking the tracker and the application everywhere she went: *“I went down to the laundry twice and I took him with me to do the laundry. Just to see how many steps that was.”* Barbara quantified activities that she normally engaged in and saw the numerical benefit in regard to her step count. She explained how she checked the application at least once but normally a few times a day, no matter where she was: *“One day, I was out with Deirdre, spending our Christmas vouchers, and I thought I’d just sit down and check it, the app thingy, and I thought, Ooo, look how many steps I’ve done.”*

Furthermore, Barbara used this app to not only monitor her step count, but also to increase it. She recalls checking the application to see how many steps she had done, and then acting accordingly. Similar to Steve, who discusses an extra dog walk he added into his day to increase his steps, Barbara recalls walking to the shops or visiting a friend: *“So, instead of*

ringing her, now I go down to see her, but don't forget: I walk along the corridor and go down in the lift and walk along the corridor to where she lives."

Previously, Barbara would ring her friend every day but changed this habit and adopted a new practice where she would visit her friend, who lived only a few doors down. This, however, meant an increased step count and a change to her normal daily time.

Barbara's account demonstrated how the self-tracker could be used to alter the experience of time, as it became integrated into her habitual rhythms. Furthermore, she looked forward to a future in which she expected to be healthier, and she felt that the use of the tracker during this study period would help inform her future sitting habits. Barbara strived for euthymia, as she combined the rhythms of her existing life, by sitting less often and adopting the self-tracking device.

5.5 DISCUSSION

This chapter has sought to consolidate the conceptual framework of time around four key concepts, namely biographical temporality, rhythms, intercepted rhythms and quantified time, with the aim of capturing the multiple temporalities and rhythms at play.

The chapter analysed three case studies that detailed responses to a self-tracking device that sought to reduce sitting time. It drew on the concept of time and the different ways in which biographical time, rhythms and the self-tracking device come together.

The three case studies were different in terms of their responses to and engagement with the self-tracking device. Steve responded to the tracker's prompts when he did not consider it too much hassle to get up, while Ann did not get on with the self-tracker at all, being too poorly to engage with it, and so she dropped out of the study altogether. Barbara got on well with the device, creating new habits for herself and changing existing habits in order to respond more

to the tracker.

The foundation of biographical time underpinned these participants, as participants such as Ann looked back on better days, when they were healthier and more active. Others, such as Steve and Barbara, looked to their futures and anticipated getting healthier.

A difference in pace was also observed. Ann adopted a very slow pace, impinged by the severity of her illness and her reliance on oxygen and her scooter to get around. This slowness was a result of her illness, thus causing friction (Cresswell, 2010, 2015). Barbara's pace was much quicker, and therefore she experienced very little friction in comparison to Ann. This concept of friction makes clear the connection between physical mobility or movement and time, which can be seen across the case studies discussed herein. Cresswell (2010) outlined the enacted practice of mobility and the act of movement as being dependent on both our ability and our will to move, as well as being out of habit. Furthermore, there are representations and meanings attached to the concept of mobility, where Ann's slow pace compared to Barbara's quicker one represents the severity of Ann's health (p22).

Ann had less ability to move than the other two cases, and unlike Barbara and Steve, she spent very little time looking forward to her anticipated future (Adam, 1995). Instead, she recounted happy past memories but was sad and mournful of this previous life. In contrast, Barbara and Steve discussed their futures, wishing to get better and do more (Phoenix, Smith, & Sparkes, 2007, p244). Pierret (2001) identified that most of her patients, in an interview HIV study, talked about their past but concentrated on the idea of continuity. Some of the patients also had similar narratives to Ann, which Pierret referred to as "sad luck [stories]."

Adam (1995) underlines the importance of constantly adapting to the new rhythms of our body and grasping our 'body time'. She argues that the concept of time is interrelated with our health, and upon observing this fact we can see Barbara as an example, in that she adapted to her new body rhythms and used the tracker to reach euthymia.

The repeated movements, routines and rhythms across the cases differed (Lefebvre, 2004). For Ann, there were no habitual rhythms, and she had no concept of day or night, as she chose not to get dressed and since her exacerbation slept during the day and not at night, thus interfering with her cyclic repetition (Lefebvre, 2004). Her life consisted of no habitual routines, and thus adopting these to allow for the addition of self-tracker was not possible. Steve, on the other hand, brought forward existing rhythms to allow him to include the tracker in his normal daily life. Therefore the tracker, sitting less and his habitual rhythms had to coincide, in order for him to engage in activity. Barbara differed completely, as she introduced new rhythms into her life, thereby creating eurhythmia. Her new habits allowed the self-tracker to interject into her life harmoniously. The bodily rhythms at play for these case studies were evident throughout, as the participants often needed to sit and catch their breath, which often interrupted their routines.

The self-tracker also interrupted their routines and sought to alter their meaning of time. It functioned as a disciplined form thereof (Green, 2002; Lash & Urry, 1994), designed to orientate their days and rhythms, deviating how they spent their time. Steve's day was often disrupted by LUMO, and whilst in some cases he chose to alter his meaning of time and stand up, in many cases he chose not to do so unless it coincided with his habitual rhythms and was meaningful to him. However, for Barbara, the self-tracker did alter her meaning of time. She changed her timetable to allow the tracker to intersect with her other rhythms, thus preventing disruption and demonstrating Lefebvre's (2004) notion of eurhythmia. Ann's attempt to use LUMO was interrupted by the existence of the broader context of her biographical time.

Overall, these case studies have highlighted how the addition of a self-tracking device can affect the experience of time. Whilst the self-tracker is designed to break up sitting and change the meaning of time for the participants, these case studies have demonstrated that the rhythms of digital media do not synchronise easily, and therefore we must first understand

the individual's body rhythms and everyday routines. Thus, it seems impossible to introduce a device to reduce sitting, without first understanding the individual timescapes at play. This chapter has demonstrated how time and pace influenced self-tracking use and sitting less often. I have argued that these participants engaged with sitting and tracking differently, which for those who experienced fragmented biological and cyclic rhythms resulted in dropping out of the study, and for those who anticipated an improved and healthier future they tended to either engage when meaningful or alter rhythms to accommodate for this sitting and tracking agenda. Therefore, it is imperative that these experiences of time and pace are explored if we are to integrate a self-tracking successfully into the sitting agenda in this participant group.

CHAPTER 6 ‘THERE’S A TIME AND A PLACE FOR EVERYTHING’:
OFFICE WORKERS MAKING SENSE OF SITTING, PLACE AND TIME

6.1 INTRODUCTION

This chapter is similar to Chapter 1, in that it addresses the meanings attached to sitting, but from the perspective of office workers in a UK county council. These participants were asked to wear a self-tracking device to reduce their sitting, in a similar way to the COPD participants. This chapter explores the first interviews with these office participants, which explored the meaning they associated with sitting. I discuss how their meanings were aligned with place and how differences between the place of work and home were observed.

Public health research has paid attention to place and argued that it affects health both directly and indirectly, in which case we need to understand better the contexts in which people live, if we wish to understand how place affects health and healthy behaviours (Rainham, McDowell, Krewski, & Sawada, 2010). Hillemeier, Lynch, Harper, & Casper (2003) suggest that where people live and spend their daily lives has an impact on health outcomes such as obesity, smoking, physical activity and alcohol consumption. Scholars (Macintyre, Ellaway, & Cummins, 2002; Rainham, McDowell, Krewski, & Sawada, 2010) also maintain that place influences our health and that it often determines how much autonomy we have in our actions vis-à-vis health behaviours.

This chapter starts from this public health research viewpoint, which I use to comprehend the meanings associated with sitting, which differed depending on the place in which it occurred. This strand of the literature addresses sitting and place by looking at associations between variables, for example between sitting time and workdays and non-workdays (Clemes et al., 2016), barriers and facilitators to sitting (O’Neill & Dogra, 2016) and the environment and

behavioural change. However, I take a different approach to this literature and explore ‘meanings of sitting’, which investigates the lived experiences of the participants by allowing them to discuss with me freely their experiences of sitting and the contexts of their lives.

In what follows, I will look at two strands of the literature. First, I introduce literature which addresses office workers and sitting, and next I present literature on place and time and how this will be used to make sense of these office participants.

6.2 DIFFERENT SITTING, DIFFERENT CONTEXTS

In the first chapter, focusing on meanings that COPD patients associate with sitting, the idea was put forward that not all sedentary behaviour is equal, taking pointers from O’Neill & Dogra (2016) and Kikuchi et al. (2014), who studied salutogenic sitting and argued that some sitting has positive benefits.

This literature takes a positivist approach to sitting, which is defined by its interest in “a scientific approach that wishes to establish cause and effect” (May, 2011). It is based on realism and an attempt to find out about “one real world” (May, 2011). Literature of this type identifies associations between sitting and other variables. For example, Chastin, Schwarz, and Skelton’s (2013) consensus classified sedentary behaviours and acknowledged that sitting is different depending on where and when it is performed. In fact, they posited that it has different health benefits and detrimental effects based on these contexts and that a relationship between sedentary behaviours and health needs to be established in order to understand them better. This relies on a better cognition of the determinants and contexts of these behaviours. Therefore, this evidence suggests that different types of sedentary behaviours have different impacts on health and well-being, as some sedentary behaviours have health-enhancing effects (we all need to rest and relax). In terms of their consensus,

therefore, Chastin, Schwarz, and Skelton (2013) identify what makes people sit and the association between this and the idea that different forms have different health effects. In identifying the health benefits and determinants of sitting, the following facets are characterised: the purpose (why), the environment (where), the social context (with whom), the type or modality (what), associated behaviours (what else) and when the behaviour takes place (when). This literature is useful for gaining an understanding of sitting and the relationship it has with health, by detailing the importance of the domain in sitting, which they consider to be indoors/outdoors, the physical variables, such as temperature and visibility, and social variables and how these have an impact on SB.

Clemes et al. (2016) also discussed how SB is different in different contexts, by using the term ‘domains’, which they define as the context in which sitting occurs. They identify five domains, namely work, travel, watching television, using a computer at home and other leisure activities, and they use the domain-specific sitting time questionnaire as part of their study (J. Chau, Hp, & Dunn, 2011), referring to it not specifically as a place but rather in terms of multiple contexts of sitting. In this way, the domain is different to our reference to place, as it includes, for example, watching TV, using a computer at home and transport.

Similarly to Chastin, Schwarz, and Skelton (2013), this research focuses on the patterns and determinants of SB, albeit Clemes et al. (2016) also find that differences exist between work and non-work sitting, arguing that more focus is needed on office workers’ free time.

The existing literature on distinctions between sitting notes that it can be understood in terms of where and when it happens. However, authors such as Chastin, Schwarz, and Skelton (2013) acknowledge that it can be either detrimental or positive for health, whereas I wish to explore the meanings associated with it and provide an account of how these office participants experience sitting and what it means to them in the context of their everyday lives.

Barriers to and facilitators of reducing sitting in the workplace have been explored; for example, Cole, Tully, & Cupples's (2015) study explored office workers' perceptions in this regard and involved the use of a mobile phone application to track their behaviour for two weeks. Semi-structured interviews were also employed to explore the barriers to and facilitators of reducing sitting in an office environment. The participants discussed how they felt they had to 'get the job done', which in turn prevented them from reducing their workplace sitting or using the device to its full capacity. They also discussed a lack of facilities to enable them to move around the office; for example, there was no canteen, which would otherwise have allowed them to have a place to go to in order to reduce their SB. Thus, they discussed how the work environment often prohibited them from stretching their legs, so to speak. This helps to understand my office participations, who resonated with some of these findings and thought that reducing their sitting at work was difficult as a result of environmental factors.

Whilst for the COPD patients place was not a particularly important factor when considering their meanings of sitting, place played an important contextual role in the office workers' definitions. By considering the context of sitting in this population group, I am able to provide a broader understanding of my office participants' sitting, which goes beyond the immediate detrimental or benefits to health and instead resonates with the participants' discussions on and around place. Therefore, by exploring the meanings they associate with sitting, I am able to capture their lived realities and relate these to the idea of place and pace.

In what follows, I examine the second strand of literature, which relates to place and time and brings a different conception of the environment, namely that movement, rhythms and pace are added to the idea of place.

6.3 PLACE, RHYTHMS AND PACE AT WORK AND HOME

Sitting happens in a particular place, and not only is it associated with specific meanings, but it is also shaped by the ‘rhythms’ of that place or space. Rhythms in this chapter offer a perspective on the environment that is concerned with the habits of everyday daily lives, including the speed and pace of our movements and how these intertwine with people, society and places (Wunderlich, 2013). Lefebvre argues that “Rhythms embody time, and are place specific” (pp.1-69); therefore, the concept of rhythms will help me make sense of how the participants adjust to the rhythms of place and how they become accustomed to them. Research has addressed the meanings people attach to places which influence our sense of self and identity (Green, 2002; Middleton, 2009; Steward, 2000; Wunderlich, 2013). Tuan (1977) defines place as “less abstract than space, what begins as undifferentiated space becomes place as we get to know it better and endow it with value” (p6). In this chapter, we address place and the meanings that become attached to different places, characterised by a change in pace and rhythm. Existing studies have explored how place shapes our rhythms. Wunderlich’s (2013) research focuses on the temporal aesthetics of places in the city by exploring the representation of time in everyday urban locations, and it does so by utilising the importance of place-temporality, i.e. the relationship between the sense of time and place. He argues that in urban places the sense of time is largely dependent on an individual’s understanding and experience of the places around them. Sense of time differs across locations, and it is characterised by pace and speed; which in Wunderlich’s (2013) study refers to the fast tempo of London’s city centre, which he described as noisy and busy, and the slow tempo of Regent’s Park, which he described and calm and harmonious. He noted that some places were considered more common for engaging in social practices and activity, for example restaurants, as time was considered shared and collective with friends and family. He also identified a difference in walking rhythms, as individuals rushed along

packed pavements and busy roads in the city centre and strolled slowly, taking in the views, in Regent's Park. This research identifies the importance of place when understanding walking rhythms. I draw comparisons between this research and my own, and I argue that the everyday act of sitting is shaped by place and time and can be characterised by pace and speed. . Through this research, I suggest that for the office workers, the meaning of sitting is largely dependent on their association and experience of the places around them, to the extent that differences between work and home can be observed.

Rhythms can tell us a little about how place and time are experienced and constructed; therefore, rhythmanalysis can help explore more about places and the habits that occur from temporal patterns. Edensor (2010) investigates the rhythms of walking and the ways in which they intersect with temporalities and places. He contends that it is indeed laden with particular rhythms and produces different experiences of places as we walk.

In addition, Middleton (2009) explores the temporality and spatiality of urban pedestrian movement by looking at the different temporalities at play in pedestrian movement within an urban city, using diary and interview data. Similarly to Wunderlich, she argues that the notion of rhythm is a particularly useful concept in engaging with place, time and people's walking. These extracts suggest that rhythms form an integral part of understanding place. Therefore, I employ this research to understand the meaning of sitting in relation to place for office participants, as a difference in pace and rhythms can be observed, depending on whether one is situated at work or at home.

This chapter engages with the literature on place, pace and rhythms, in order to understand the meanings associated with sitting and how these alter according to being located at work or at home. The existing literature has highlighted the usefulness of looking at how we adjust to rhythms of place. I argue that the meaning of sitting for these individuals is based largely upon what Wunderlich (2013) calls *place-temporality*, "an aesthetic experience, a form of

representation of time in urban space” (p384). This chapter therefore focuses on the meanings of sitting and draws attention to how they change depending on the place in which sitting happen, using the place framework in order to make sense of the participants’ rhythms and pace during work time and in their free time.

6.4 METHODOLOGY

This chapter is based on interviews that were conducted with 24 office workers in a council office in the UK. Similarly to Chapter 1, which focuses on the responses to the open association question, “What do you think of when I say the word sitting?”, this chapter discusses the office workers’ responses to this question. The participants were involved in two interviews, namely an initial interview and a follow-up. This chapter focuses primarily on the first interviews and the participants’ responses to the specific question about meanings they associate with sitting.

The analysis of this chapter focuses on place and time and how time changed for the participants with the addition of the self-tracker into their normal daily lives; however, I also add the element of place into the mix, to discuss how the idea changes the meanings they attach to sitting.

The following section presents themes that emerged from answers to the free association question, referring frequently to two specific places distinguished by the participants: home and work. The themes refer to i) the pressure of sitting at work and ii.) sitting at home and relaxing. The themes are discussed in detail in what follows.

6.5 ANALYSIS

Responses to the free association question frequently referred to two places, the first being home, where participants relax or watch television, and the second being work, where they sit

at a desk or computer. Thus, a different meaning of sitting became apparent that related to place, which can be seen below:

“My first impressions of the word ‘sitting’... I suppose work, so sitting is stressful and busy. And the other word that comes to mind is kind of ‘relaxing’ at home, on my sofa, so you know, sitting at home on the sofa, watching TV with a cup of tea. Whereas at work I never finish my tea! I suppose they’re the two words, ‘stressful’ and ‘relaxing’” (Emma, interview 1)

Emma relates sitting at work to stress, whereby the busy rhythms of her working day cause her to sit a lot. However, she notes that sitting for her also refers to relaxing in the comfort of her own home, which has slower and relaxed rhythms compared to her work. Therefore, we see that sitting for Emma relates to stressfulness versus relaxing, and it can also be enjoyable.

“Sitting... I think my immediate thoughts are relaxing, sitting comfortable, you know, at home. But actually I guess I am sitting at my desk at work all the time, but it’s not the same really; I much prefer sitting at home, it’s comfier and less stressful. Much more enjoyable!” (Ella)

These extracts describe two distinct places: home and work. For both Emma and Ella, work is a place associated with stressful and busy sitting alongside a faster pace and rhythm and where they are rushed off their feet and have little time for themselves or to finish their tea. Home, in contrast, is slow-paced and sitting is enjoyable, associated with being comfortable and relaxed. Home as a place is associated with comfort, but this is contrasted here. The extracts below will therefore describe place-related themes relating to sitting at home and at work which emerged from the interviews, and they will help to identify the different rhythms and habits of work and the meanings participants associated with sitting.

6.5.1 THE PRESSURE OF SITTING AT WORK

6.5.1.1 The Uncomfortableness of sitting in the workplace

Many participants discussed their comfort when asked about their sitting. They talked about ergonomics and correct posture and how sitting for too long was unhealthy for their legs and joints. The majority associated this discomfort with the workplace only, as they talked about the need for specialised equipment to ameliorate the hours of sitting per day:

“Uncomfortableness, I really don’t like sitting down, if I’m honest. I think because we are mobile workers as well, you know, whereas before I had a permanent desk and I would have a backrest and a footrest and things to try and make things ergonomic, but the problem is you can’t carry that around with you – and that’s part of the problem now. It’s hard to sit here all day now I need the right chair and things like that” (Ava)

Ava noted how changing work conditions had resulted in her feeling more uncomfortable whilst sitting at work, as her health was deteriorating. This change in biographical time demonstrated how, previously, she used to have equipment to assist her comfort, including a backrest, which she had in order to help her with a pre-existing back problem. She discussed how, due to the mobile nature of the office, she no longer has a permanent desk and therefore no longer has access to this equipment. Work has now become a place she considers uncomfortable, though beforehand this was not the case:

“I sit a lot, but not properly. As you can see, I’ve got two cushions and I’m sat on a rather comfortable chair here [at home], but then if you go into the office you don’t have your own chair and desk, so you just have to sit on whatever is available. One time, they used to check that we were all sitting right and that the chairs were right, ‘cause it’s more difficult to sit all day without that sort of stuff, but I guess with the cuts, maybe this stuff is less important to them now” (Janice)

Like participants in Wiles et al.'s (2009) study, Janice discussed the comfort she experienced at home. She highlighted the differences between the physical comfort of sitting at home and the comfort of sitting at work. She also noted how at home the availability of where to sit is greater, whereas at work it is not. Similarly to Ava, she talked about how personal desks are no longer allocated, which means that she has to sit where there is available space. Janice and Ava consider comfort to be associated only with home and argue that comfort at work used to matter, in that correct seating was checked; however, she noted that budget cuts may have stopped this from happening.

These extracts suggest a lack of consideration in terms of health (ergonomics, posture) when it comes to the workplace. The participants did not feel comfortable sitting at work like they did at home, as they felt more relaxed and able to sit more comfortably. They negatively associated uncomfortable sitting with their place of work, which was considered not only a workplace issue, but also a health matter. Many felt that recently, as opposed to the past, their health was not considered important at work. They employed the biographical time of the past and discussed that recently there had been no checks to ensure they were receiving the correct equipment or following the correct health guidelines when it comes to ergonomics. Ava also mentioned that since the office now requires a mobile working place, individuals no longer have their own desks and chairs but have to 'hot desk', and so acquiring the correct equipment for the workplace has become more difficult. She also explained that in the past she had personal equipment to assist her in sitting comfortably, but this is no longer the case, as it had become too difficult for her to carry it around.

From these quotes, we can see that participants associated being unhealthy with sitting at work in terms of aching joints and backs. Furthermore, they considered that their employer was no longer paying attention to these health effects of workplace sitting or providing the equipment necessary to counterbalance the effects of prolonged sitting in the new hot desk-

based environment. This further exacerbated their sense of sitting at work being detrimental to their health.

6.5.1.2 FAST-PACED WORK

The participants also described their workplace as busy and stressful, which resulted in an increased amount of sitting in order to complete their workloads:

“Most of my sitting is work-based, so I guess sitting means being busy and having lots to do” (Jacob)

“In front of my desk all day, checking emails, meetings with other people, being on the phone” (Madison)

The workplace has repetitive rhythms that result in participants feeling busy and stressed. They discussed the fast-paced environment and rhythms associated with the hectic and stressful environment, which resulted in many associating sitting with being busy in the workplace. This place they felt constrained to them, as they did not feel comfortable enough to break their rhythms, and thus this resulted in them feeling less able to take breaks during their workdays. For many, the meaning of their place of work had become stressful, aligned with speed and an inability to slow it down and take personal breaks such as lunch, which resulted in them working for long hours and feeling unable to get up.

The participants engaged in non-work-related sitting whilst at work, for example eating at their desks at lunchtimes:

“It might mean sitting in front of the computer or having some food or doing some sort of a task along with the sitting. I’m always busy at work so don’t often get a proper break” (Jacob)

“More recently, I even eat my lunch at my desk, too, and do all that other stuff at the same time. I guess I feel like people expect me to sit at my desk and work until I get all my work done, even if that means working through lunch” (Madison)

The participants multitasked their sitting in tandem with work and personal activities, feeling unable to break their rhythms. Madison discussed how she felt pressured to sit at her desk until all her work was complete, and thus a lack of freedom and a feeling of being watched prohibited them from eating their lunch, for example, anywhere other than at their desks.

The participants noted a change in the office when various technologies such as Skype and the paperless office were introduced, meaning less mobility in the workplace; this caused many to feel guilty about being mobile within the workspace, even for personal breaks such as going to the toilet:

“Work. I sit all day at work and don’t move, because everything is on here [computer], so I don’t need to move; it makes me feel guilty then when I need the toilet, because the dryers take so long to dry your hands” (Nina).

The participants described technological innovations in terms of biographical time, as they referred to the technological additions in the office as increasing the pace and further increasing their sitting. Changes to the workplace over the course of time meant that they felt that they should sit more and had less reason to move, considering all their work was now on the computer. Therefore, whilst the technology was introduced to assist in productivity, it became counterproductive in terms of increasing sitting and stopping them from moving freely around the office.

The rhythms of work were therefore fast and busy, so much so that the participants felt they could not have breaks during the day, even to go to the toilet, where they discussed rushing

back to their desks. They also talked about not only feeling pressure to work all day at their desk, but also eating at their desk, as they felt they had to work until the job was complete.

They discussed how they felt uncomfortable at work, and how they often felt hurried and stressed to be back at their desks. In this sense, the rhythms of work were fast and required them to hurry about, ensuring they did not take too many non-work-related breaks, which resulted ultimately in an increased amount of sitting.

6.5.2 SITTING AT HOME AND RELAXING

Unlike the fast-paced workplace, the home was described as relaxing and enjoyable, a place where they could sit and do things such as watching the television. Similarly, they discussed sitting as something they did whilst engaging in something else:

“In a way relaxed, but equally I think of sitting, erm, as doing something as well. I’ll be, erm, I suppose it’s not, it doesn’t mean the same to me as relaxing on the sofa or something – it might mean sitting in front of the computer or having some food or doing some sort of a task along with the sitting, but I suppose I’d say relaxing on the sofa” (Jacob)

Like the COPD patients, who I considered ‘satisfied sitters’ because they engaged in something whilst they sat, e.g. watching TV, reading, playing on the computer, the office workers also described doing these activities. Jacob described a very slow-paced rhythm, as he was relaxing and doing something at the same time. Similar to Wunderlich’s (2013) description of Regent’s Park, which was slow-paced, relaxing and harmonious, the participants considered their home to be relaxing and restful. Wunderlich (2013) characterised place by pace and speed, which in this case was slow. In their homes, the participants described enjoying their sitting, which again resonates with the COPD patients in Chapter 1.

The rhythms of the home were much slower-paced than at work, as multitasking at work (working and eating lunch) was considered differently to multitasking at home (sitting and watching television).

Individuals did not care about lost time like they did at work, and they discussed sitting for the sake of relaxing or resting:

“I don’t know, lazy. I don’t really know what, low energy I suppose just rest, erm, yeah, sitting with a coffee at home on the sofa, for the sake of it, I guess” (Noah)

“I sit down in front of the telly a lot; I don’t like to have to do anything. I am inherently lazy, always have been, and I really try and fight it. I had to go to Birmingham for a job fair and I live about a 10-minute walk from the train station, and I drove there and parked right outside the door, as close as I could get. But at home I just sit and do nothing, just for the sake of it” (Poppy)

This extract describes the slow-paced rhythms of the home in which Noah engages on the sofa. Both extracts use the term ‘lazy’, which is laden with negative connotations. They contrast the fast-paced rhythms experienced at work, as exemplified further in the extract below:

“My cosy chair, the sofa, my bed; anything that’s not physical activity, anything I enjoy doing really” (Harper)

Harper highlighted her enjoyment of doing very little, which again contrasts with the workplace. However, this is different to Noah and Poppy, who do not explicitly describe finding enjoyment in their lazy time; rather, they highlight sitting for the sake of sitting rather than experiencing pleasure from it, which cannot be considered an enjoyable activity like we see in the case of Harper.

The participants also discussed engaging in collective or shared time whilst at home:

“Watching TV or chilling with friends. Going out for food or drinks with friends, I do too much of that! Watching the soaps with my boyfriend” (Penny)

“Erm ,that’s my relaxing time sitting, yeah, watching telly, well during the week after work it is. I like to be active at the weekends and go to the park with the kids. But, erm, yeah, Monday to Friday its relaxing watching telly with the kids, a movie or playing games with them” (Kim)

Collective time was seen as enjoyable and differed from the discussions about collective times in the workplace, for example being in meetings. Unlike the workspace, some participants described sitting in the home or outside of the workspace as a collective time where they could get together with friends and family. This resonates with Wunderlich, who identified that some places are considered more common for engaging in social practices and activity. For the participants, this time with friends or family was something to be savoured and remembered, something they could look back on and reminisce about in the future, which is the same as the older adults in Chapter 1, who sat to socialise.

The participants were less conscious of time, unlike when at work. However, some of them also discussed occasions when they worked from home and contrasted how the slow-paced and calm environment differed from their fast-paced workplace. This acceleration of pace was a result of their change in location, as working from home was experienced as much less stressful and busy than when in the office:

“Probably work. I sit a lot at work; I’m too busy to move, really. I do work at home sometimes and that’s less busy, well maybe not, ‘cause I still have a lot to do, but I can breathe a bit more. Sitting in my pyjamas makes it all seem less stressful” (Ella)

The participants demonstrated how the pace of rhythms changed based on the place they occupied. When working from home, they considered themselves less busy and stressed, thereby adopting a much slower and relaxed rhythm. In contrast, the pace of their rhythms increased and was much more stressful when returning to the office. Home-working is therefore associated with being less busy, slower-paced and less stressful as a result of a change in place.

The participants demonstrated how their home was considered a relaxing and enjoyable place, as they did not feel hurried and stressed and could engage in less regimented rhythms at a slower pace. These relaxed sitters could be compared to the COPD satisfied sitters, who sat to engage in enjoyable and fun activities. However, the significant difference between them is that the COPD patients can be considered to be engaging in ‘salutogenic’ effects of sitting, whereas the office workers typically could not be seen in this light. Rather, whilst at home, the office workers highlighted the necessity of considering sitting as a relaxing activity as a beneficial effect in terms of health, as for them it was considered to be a highly effective for stress relief. In contrast, those participants who watched television did not fit into this stress-relief health agenda, but demonstrated ‘hedonism’, which does not fit easily with the existing sedentary behaviour agenda, given that it has little or no health benefits and is merely enjoyable.

6.6 DISCUSSION

The findings of this chapter detail the different meanings assigned to sitting by office workers, which related to place and time and distinctive differences between home and work.

In this chapter, I have highlighted the need to address the meanings of sitting, in order to develop further existing research which looks at the determinants or the positive benefits

thereof (such as Chastin, Schwarz, & Skelton, 2013). This approach to exploring sitting allowed me to explore the participants and how their experiences of time, pace and place influenced their meaning of sitting.

This chapter found that the meaning associated with sitting related to the notion of place, in that a contrast between work and free time became apparent. The participants discussed that in terms of sitting, work rather than home was the problem. Unhealthy sitting was therefore associated with work; however, as they chose not to engage with tracking during their free time, as discussed in the next chapter, no statistical evidence can support this hypothesis.

When discussing their homes, the participants highlighted how sitting was relaxing, as they could spend time with family or friends, or alternatively they could just be lazy. In contrast, workplace sitting was associated with a heavy workload, being uncomfortable and being unable to take small personal breaks such as eating lunch.

As discussed previously, numerous studies have addressed differences between sitting, with some instances associated with having positive influences on individuals, for example reading and doing puzzles which result in better self-reported mood (O'Neill & Dogra, 2016). Sitting has also been associated with other behaviours, as scholars have classified it into barriers and facilitators, with office worker barriers including feeling like they “[have] to get the job done” (Cole, Tully, & Cupples, 2015), which resonates with some of the participants’ accounts in this chapter. These studies look for objective associations and conclude that sitting can have positive connotations. Whilst at times it is considered a choice and individuals enjoy it, sometimes it is determined by the environment in which we find ourselves, which for these participants related to work.

This chapter explored office workers and the meanings they attached to sitting. The findings uncovered how it was related to the idea of place, which I employed alongside the time

literature, in order to help understand this point and the habits and rhythms of the participants as they move through the different places of home and work.

This research goes beyond researching the detrimental or positive effects of sitting; rather, the participants in this chapter differentiated their sitting based on place, which became associated with different feelings and actions. The participants associated home with being relaxing and work with being stressful. By drawing on the framework of temporality and rhythms, I was able to make sense of the office participants and their discussions around place, and how home was tied to slow-paced rhythms and work was associated with fast-paced rhythms. The rhythms at work were considered so fast, stressful and unpleasant that they were not able to take breaks. The slow-paced home rhythms meant that, similarly to the COPD patients, sitting also meant relaxing for many, which they indulged in on their comfy sofas or in bed. However, in contrast to the COPD participants, whose sitting can be seen as salutogenic, these distinctions were harder to make in relation to working adults, as they did not have chronic conditions that influenced their sitting in the same way as the COPD participants.

This chapter identified how place plays an important role in the meanings attached to sitting by office participants. In terms of work, sitting encompassed a fast-paced rhythm, in line with a highly pressurised and stressful environment. The participants had less opportunity to reduce their sitting, and they negatively related work to being uncomfortable. Conversely, sitting at home was enjoyable and relaxing, and a slow-paced rhythm dominated the environment.

I contend that the meanings linked to sitting play an important role in understanding why these participants engaged with reducing sitting and self-tracking use, as their distinctions between home and work influenced their behavioural change.

CHAPTER 7 TRACKING PRESSURE AND CRITIQUING THE WORKPLACE

7.1 INTRODUCTION

Following on from the previous chapter, this chapter discusses how the office participants got on with the self-tracking device. In this regard, it addresses how they made sense of it in relation to biographical temporality and the ways in which they looked back on better and happier work days in comparison to the stressful and highly pressured work days of their present lives, and an institutional temporality which dictates their ability to engage with sitting less and self-tracking.

The rise in digital self-tracking has stimulated research on the use of self-tracking devices to reduce office workers' sedentary time, and apparatus such as accelerometers are used to quantify sitting time in the workplace (Cole et al., 2015; Shrestha, Ijaz, Kukkonen-Harjula, Kumar, & Nwankwo, 2014; Thorp et al., 2012; Waters et al., 2016). At the same time, the increasing use of such devices to monitor health at work has been described critically as a form of "panoptic self-surveillance" (Till, 2014). Moore (2015) notes that more workplaces now use wearable devices to measure both productivity and health, and employees become observed subjects, surveyed by their employers (p1). This chapter discusses three themes: biographical changes in the workplace, documenting the pace of work and refusal to monitor free time. These three themes relate to the literature on temporality and help in unravelling how the participants look back on better days at work, document how much they sit at work and relate tracking and surveillance practices to work activity only. These themes deal with the broader idea that tracking can fall in between health and critical strands of the literature, and that participants learn about their sitting but do not seek actively to change it.

In this chapter, I discuss two different elements of the literature. The first looks at qualitative and quantitative health studies that focus on behavioural change and attempt to reduce sitting in the workplace. In addition, I discuss literature that seeks to encourage activity among people in a sedentary occupation. The second body of work takes a critical stance and focuses on workplace surveillance and resistance as well as ‘sousveillance’ (surveillance from below). These two schools of thought oppose one another, but I will navigate between them in my analysis of the three themes, in order to demonstrate how my participants both documented their sitting practices at work, in order to critique their work environment, and were critical of the device being using in their free time.

7.2 REDUCING SITTING IN THE WORKPLACE

Research on sedentary behaviour has addressed people’s perceptions of reducing sitting in the office environment. Hadgraft et al. (2016) interviewed Australian office workers to understand the barriers to – and feasibility and acceptability of – this issue, identifying three themes. First, participants discussed how the nature of the job would make it difficult for them to reduce sitting, as it entailed computer use. The increased reliance on technology in the current workplace also reduced opportunities to move around. The workload itself was also a barrier, as frequent breaks would eat into valuable work time. Second, normal workplace behaviour involved sitting unless they took purposeful breaks such as going to the toilet. Lastly, participants noted that the physical workplace environment made it difficult for them to reduce their sitting, for example as a result of a lack of sit-to-stand desks in the office. Similarly, participants in Cole, Tully, & Cupples’s (2015b) study, who used a smartphone device to track their sitting whilst at work, felt it made them more aware of how much time they spent doing various activities, especially while doing their jobs. The employees expressed how they felt unable to reduce their sitting, as they felt they “had to get

the job done” and had a desk-based occupation.

Other barriers to reducing sitting in the office included being too self-conscious to stand in the office, as peers may have thought they were not working (Chau et al., 2014; Mackenzie, Goyder, & Eves, 2015), a lack of social support from team leaders or bosses (Hadgraft et al., 2017) and being unable to change the office norm of sitting, which participants felt prevented them from getting up because of the desk-based nature of the job and the workload, which had to be their priority whilst at work (Mackenzie, Goyder, & Eves, 2015; Waters et al., 2016). These studies therefore demonstrate that reducing sitting in the office is difficult for people, and additionally it has numerous barriers attached to it.

Facilitators to reducing sitting have also been acknowledged. For example, Mackenzie, Goyder, & Eves (2015) found that the participants in their study felt more aware of their sitting at the end of the process than before the four-week intervention in which they participated. Whilst many acknowledged that they liked the idea of being reminded to get up via email or by using timers, some also found the reminders distracting to their productivity.

Furthermore, research by Clemes et al. (2014) distinguished between work and free time sitting, arguing that office workers who sit for prolonged amounts of time also tend to sit a lot during their free time. They invited participants who worked in an office to wear a self-tracking device for seven days, both inside and outside of work time. The participants reported that they did not compensate for their high levels of SB at work during their free time by being more active outside of work. Their research argues that free time is often overlooked when interventions target office-sitting time, and that reductions in free-time sitting should be researched in office workers.

The findings of these studies have highlighted that people find it difficult to reduce sitting in the workplace because of work pressure and an inability to change office norms and environments (Chau et al., 2014; Hadgraft et al., 2017; Mackenzie, Goyder, & Eves, 2015;

Waters et al., 2016). Clemes et al. (2014) also posit that those who sit at work tend not to compensate for this during their free time, therefore arguing that a separation in terms of sitting and activity levels between work and free time exists, which became apparent in the previous chapter of the current thesis. My participants also separated their work and free time sitting; however, they contended that they were more active in their free time, or they did not feel the need to be monitored, and thus they did not need to counter their workplace sitting. I utilise the distinction of place between work and home discussed in the previous chapter, and I concur with earlier research into sitting in the workplace which argues that reducing this practice is often difficult because of numerous barriers. I collate this literature and explore how self-tracking and sitting differ, depending on place, by adopting a temporality and rhythms framework which makes sense of the biographical and institutional temporality and everyday rhythms and pace of the office participants. Initially, I discuss literature which addresses different types of workplace monitoring, including performance and health monitoring, and how these relate to critical self-surveillance.

7.3 WORKPLACE SURVEILLANCE

Two types of monitoring in the workplace, related to the current study, can be identified in the literature: performance monitoring and health monitoring. Performance monitoring devices help employers survey and monitor their employees (Rosenblat, Kneese, & Boyd, 2014; Vorvoreanu & Botan, 2000). In their qualitative study, Sarpong & Rees (2014) explored whether performance monitoring used within a workplace was being employed to control the workforce and micromanage them. Employees discussed being aware of the necessity of monitoring, albeit they felt conscious of being watched, as their actions and behaviours were constantly monitored (including when they made a cup of tea or went to the toilet). Moore (2015) suggests that such initiatives force people to quantify aspects of their

lives whilst at work, and they include devices such as wearable cameras on lanyards and badges, or pedometers. They are designed to assist managers in the control and rationalisation of work, or in the improvement of subsequent personal health outcomes (Rule & Brantley, 1992).

Whilst performance and health monitoring can both purportedly increase workplace productivity, health monitoring in the workplace seeks to encourage employees to increase their steps or to take regular breaks to reduce stress levels, which may actually go against performance monitoring, in that breaks may also reduce the amount of time spent on the 'shop floor'.

Lupton (2015) argues that self-tracking is a form of panoptic self-surveillance which blurs the boundaries between the private and the public. She argues that such technologies force us to monitor our actions and behaviours, including within the workplace, and whilst they do allow us to collect data about our bodies and ourselves, they also force us to engage in self-surveillance (Lupton, 2015). The participants in this chapter can be described as panoptic, as they are critical of monitoring in the workplace but do not want to engage in behavioural change in their free time, as they see this as their time of freedom. In this way, they do not engage fully in self-surveillance in the way in which Lupton discuss above, nor do they completely adopt what Mann, Nolan and Wellman (2003) term 'sousveillance', which refers to actively resisting surveillance by blocking, refusing or counter-surveying (G. T. Marx, 2003). Sousveillance is an unintended use of a technology, or surveillance from below. In this way, it can be understood as a form of 'soft resistance', which happens when participants "assume multiple roles as project designers, data collectors and critical sense makers, rapidly assessing and often changing what data they collect and why in response to idiosyncratically shifting sets of priorities and objectives" (Nafus, Dawn; Sherman, Nafus, & Sherman, 2014). The participants in this chapter were creative and innovative in their tracking use during their

work time, in that they “create[d] an alternative mode of working with data” (Sherman et al., 2014, p1791) by using the device to critique the amount of sitting forced upon them by their workload. The office workers in this chapter therefore engaged with the self-tracking device in a way which encompasses both of these two arguments. They engaged in moderate self-surveillance and allowed the device to capture data on the amount of sitting work focused them to engage in by ‘documenting’ their practices at work (Rooksby, Rost, Morrison, & Chalmers, 2014). Rooksby, Rost, Morrison, & Chalmers (2014) used the term ‘documenting’ to refer to those who collect data about themselves by using a self-tracker, albeit out of curiosity as opposed to changing their behaviour. For example, one of their participants wore a pedometer to see how many steps she walked at work. In contrast, outside of work, the participants were critical of the device, refusing to monitor themselves, as they felt it corresponded with self-surveillance practices (Lupton, 2012, 2013d, 2014a, 2014b; Till, 2014).

This chapter discusses the participants’ use of the self-tracking device to both document and capture increased sitting practices at work. It can be suggested that they resembled Mann, Nolan, & Wellman's (2003) concept of *sousveillance* by using the technology in unintended ways and by critically rejecting the use of the technology in their free time, in order to avoid monitoring and surveillance at home. In what follows, I discuss the conceptual framework of rhythms and temporality, which helps to uncover the participants’ engagement with the device, both at home and at work. I maintain that this framework can help to decipher the specificity of place and time when using the self-tracking device to reduce sitting.

7.4 CONCEPTUAL FRAMEWORK

I have selected concepts from the literature to explore temporalities and rhythms that are particularly useful in determining office workers’ use of a self-tracking device to reduce

sitting. The concept of biographical time will help understand how the participants related their sitting to changes in the workplace, how work stress and being busy have increased compared to the past and how the participants felt that this will worsen in the future. The participants distinguished between their work time and free time, and therefore differences in rhythms can also be observed, as work time encompasses a fast-paced rhythm, and free time is more prone to slower-paced rhythms. These distinctions help to make sense of the repeated habits and routines of the participants and allow me to concentrate on the differences that exist between work time and free time, and in addition they may help explain how their use of the self-tracker differs for these two times.

7.4.1 THE DOMINANCE OF CLOCK TIME

In the interviews, my participants emphasised the distinction between work time and free time. To understand this notion in the historical context, it is useful to look into the transformation of time that occurred during the Industrial Revolution and its linkage to the emergence of clock time (Adam, 1995; McQuire, 1998). Thompson (1967) offers a useful discussion on the change from task-orientated work, which was present in the pre-industrial age, to clock-orientated work, which allowed the clock to control the rhythms of the working day in the industrial age (Adam, 1995). Time once depended on the type of work, whereby, for example, the task-orientated time followed by fishing communities was 'wind time'. A task-orientated timescape was useful for most tasks; for example, rural dairy farmers structured their days around the needs of their animals (Adam, 1995).

However, the Industrial Revolution changed this task-orientated approach to work and called for a synchronisation of labour, which regulated the new rhythms of industrial life (Thompson, 1967). The invention of the clock helped form new ways to organise work and time, as work time became measurable and standardised (Green, 2002). Clock time standardises time, and so one-hour of time is one-hour, no matter where you are in the world,

and the units of seconds, minutes, hours and days are continuously counted until the clock reaches its maximum time, following which it then begins its count cycle again (Adam, 1990, 1995). In this way, clock time allows us to share the rationalisation of time across the globe and amongst different countries, societies and tasks (Adam, 1995).

The clock is a machine, which standardises and totalises time (Adam, 1995). Furthermore, work time is regulated by the clock, in that activities are dominated by machine time, for example a nine-to-five workday (Green, 2002).

The office worker participants in this case study refused to monitor their sedentary time in their free time. Wyatt (2003) highlights the importance of studying users who only slightly engage with technology or do not engage at all. This is especially important considering the participants' use of the self-tracker does not confirm to popular literature on creative and innovative self-tracking use; instead, it utilises the experience offered by our participants, who engaged in a more confined and documentary manner and sought their own meanings behind using the tracker.

This theme pulls from the distinction observed by Thompson (1967) between work and free time, as individuals in this study saw self-tracking as belonging only to work time. This framework helps make sense of this distinction, by looking at the change in pace during their free (slow pace) and work time (fast pace), as their slower free time pace became related to relaxing and doing what they liked, without being monitored or feeling guilty. The participants adopted a time that lay between the clock and the task, as time at work is dictated by neither the clock nor the task, but rather by a timescape that lies between them. This concept, similar to that of clock time, helps us understand that the individuals felt the device was like being dominated by the clock at work, and thus they felt they needed a break. In this way, it became a timescape just for them, and not for the self-tracking device.

7.4.2 BIOGRAPHICAL TIME

Consisting of both present and future, biographical time is a person's perception of and anticipation of time (Phoenix et al., 2007), and it relates to a person's perception of something at any moment within their life. Moreover, it involves looking back to the past and also looking forward to an anticipated or an expected future. The majority of work surrounding biographical timescapes concentrates on those who are diagnosed with chronic illnesses, as we find in the chapter that precedes this one. The chronically ill discuss their biographical time both in terms of the past and their better health, and to their anticipated futures and what the illness has in store for them. However, biographical time is also useful in making sense of the workplace, whereby we seek to understand how individuals understand behaviour in the broader context of their lives – past and present – by looking at and comparing what existed beforehand, in the previous work timescape and the current work timescape. The past is a useful starting point, because what time was like at work before is discussed and how they anticipate work to be in the long term is also talked about. This concept also allows us to understand the changing nature of work and how this influences workers' relationships with self-tracking.

7.4.3 RHYTHMS OF WORK AND FREE TIME

Our lives are composed of a combination of overlapping rhythms. When we eat, sleep, relax, work or exercise, these all follow significantly different rhythms (Shove, Trentmann, & Wilk, 2009, p4). As a regular part of our everyday lives, work time can be argued to have its own rhythm, and these rhythms require a degree of quantification and measurement: “everywhere there is a rhythm, there is measure” (Lefebvre, 2004, p8), as emphasised by Lefebvre.

Lefebvre argues that both cyclic and linear rhythms exist in modern industrial society, (Lefebvre, 2004). Cyclic time has no beginning and no end, and it is a repetition in itself, given its continuation from the rhythms existing beforehand. Linear time is continuous, as it

has an absolute beginning that is generated from nothing, and discontinuous, as it fragments itself into compartmental time slots. Work time is mostly linear, with a clear beginning and an end, and relies on production, unlike family life, which tends to be more cyclic (Ploger & Lefebvre, 199, p. 49). Here, we can see a difference between the rhythms of free time and those pertaining to work time. The temporality framework helps highlight how the workers documented the increasingly fast pace of the workplace and the inability to break during the rhythms of work time. This pace and lack of breaks were documented by the individuals using the self-tracking device. The practice of documenting, discussed by Rooksby, Rost, Morrison, & Chalmers (2014), where individuals do not wish to change behaviour but instead document it, comes close in this case to what critical literature on surveillance has called *sousveillance*, namely resistance to surveillance, as discussed above. The participants engage in *sousveillance* in a very small way here, as they unintentionally use the tracking device to document their lack of ability to take a break at work, which in turn critiques their working environment.

Understanding temporalities has not been an explicit undertaking in self-tracking research; however, academics have discussed this point. For example, Agger (2011) and Hand & Gorea (2018) delved into *iTime*, or mobile time, a timescape which challenges the existing binaries of public and private, day and night, work and leisure and space and time. Agger (2011) argued that iPhones change our normal daily rhythms, including the way we work, live, eat and sleep. He addressed the concept of clock time, making the argument that *iTime* is not confined by modernist clock time, as we are now available all hours of the day and night. He went on to suggest that the concept of *iTime* has changed the boundaries of work, as it allows people to do so anytime, anywhere. Hand & Gorea (2018) claim that self-tracking alters people's sense of temporal possibilities in regards to self-transformation and changes the temporal meaning of media-related practices. Their interviews sought to examine how self-

tracking has become embedded in daily routines, and their findings shed light on participants who used trackers to intensify their everyday customs, such as making minor adjustments to exercise to increase what they were already doing. Some participants experienced temporal anxiety, as they found themselves checking the app and data multiple times, which eventually became an example of “compulsive checking.” Lastly, they found that many participants were “flexibly attached” to their device. In a similar way to the participants in this chapter, they did not find the device disruptive and allowed it to collect data continuously, which prompted them to think about activities such as walking and sitting in a different way. Some described it as interrupting the flow (disrupting their temporal rhythms), whilst others acknowledged times when they did not want to track, for example on a ‘bad day’, when they did not engage in any exercise, as they did not want to reveal their inadequacies. This is similar to my participants, who did not want to track during their free time, albeit their reasoning was not related to inadequacy but rather to the fact that they felt they would not benefit from collecting data at the time and actually deserved a break.

This temporality framework opens up a new perspective on self-tracking, as it seeks to understand how people perceive behaviour and behavioural change in the wider contexts of their past (memories of previous times), present and everyday rhythms, as well as in relation to the institutional temporality of the workplace.

In what follows, I use the concept of biographical time to understand how individuals recognise behaviour in the broader contexts of their lives, the past and the present, by looking at and comparing what existed beforehand, in the previous work timescape, and the current work timescape. In addition, I establish how institutional temporality dictates the working lives of the participants and makes sitting less often and self-tracking difficult. I also use the concept of rhythms, in order to make sense of individuals documenting their sitting and discussing the speed and pace of their work time and free time routines.

7.5 METHODOLOGY

This chapter focuses on both interviews 1 and 2. The analysis of this chapter rests on the framework of temporality and rhythms, in order to make sense of three major themes emerging from the data: biographical time in terms of perceived changes in the workplace, documenting sitting at work and the participants' refusal to monitor during their free time. In what follows, these three themes are discussed in detail.

7.6 ANALYSIS

7.6.1 Biographical time

When starting the study, we did not foresee that council offices in the recent years would have been hit so heavily by budget cuts, resulting in redundancies, job losses, stress and significantly increased workloads:

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

Thus, it came as somewhat of a surprise to us when many participants used the first interview as an opportunity to discuss or vent about how the increasingly pressured work environment had made them neglect their health, both mentally and physically:

“Mentally, my life's harder now here [workplace] than at home, it's more challenging. I used to make a conscious effort to go for a walk during my lunch, because I knew staring at a computer for so long isn't good for you, but I have so much to do, I can't make the time anymore” (Kim, interview 1)

“Recently, I’ve not had the problems with my back that I had a few years back, so clearly moving about is very helpful for my back, but I just don’t always have the time whilst I’m at work, and I know I should make more time for it, but I don’t”

(Raine, interview 1)

These excerpts communicate a changing biographical time, looking back to a period when they were able to make room for their health during office hours. Now, however, they no longer feel like they can fit small, natural breaks into their work day (go for a walk to stretch their legs). The participants saw this as a restriction on their time, as they felt unable to move away from work and make time for their health during work hours.

The increasing inability to move or to take breaks was seen to be worsened by the move towards a more technological office, which had made them more “deskbound:”

“I’m hardly going to a printer anymore, I’m not getting up and going and getting a file from the other room, so for me I’ll probably spend more time at the side of my desk; printing was always my excuse for having a little walk” (Mary, interview 1)

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

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

The participants noted that technological advances have resulted in an increased amount of sedentary time whilst at work. In addition to increasing sitting time, they also remarked that

many of these technologies had also changed the human dimension of their work, making them less able to interact with other people face-to-face or go to meetings in the field and in person. The move toward a more technologically advanced office prevents this, and many participants discussed another time dimension, namely the anticipated future, where they felt things would continue to get worse for them at work.

The participants looked back on days when the pace of work was slower. Similar to the COPD patients in Chapter 1, who looked back on better days when they were healthy and able to do things and now cannot, these participants also looked back on better days when they could move around the office and had more freedom and less stress. In the same way as the COPD patients, this made them worry about looking to the anticipated future. This is a different biographical time to that of the COPD patients, given that their past, present and future were based on biological change rather the political change experienced by the participants in this chapter. The repercussions were also different for the office participants, as their anticipated futures involved potential redundancies and job cuts.

Therefore, their work used to be okay, but they now see it as a place that constrains and forces them to sit all day. In contrast to the COPD patients, the environment and pace of work need to change, to allow for sitting to decrease. The findings presented by the public health literature also note the difficulties in reducing sitting in the workplace, because of pressure and an inability to change office norms. The participants critiqued the fact that this was not achievable in the current workplace and demonstrated soft resistance in this regard, expressing their discontent with the current situation. In addition, their past workplaces were considered better and less constraining.

7.6.2 DOCUMENTING PACE

The changes to the workplace discussed in interview 1 meant that when discussing the use of

the self-tracker in interview 2, it became apparent that it had been used as a tool for documenting their work culture and critiquing the current workplace situation.

The participants discussed following a work rhythm, as their controlled and regimented days did not allow for non-work-related activities in the workplace:

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

“A normal day at work is eating my breakfast at my desk and staying at my desk all day I eat my lunch at my desk, too. I won’t leave my desk apart from to fill up my drink or go to the loo, till I leave at the end of the day” (Poppy, interview 2)

These increasing pace and work rhythms resulted in fewer breaks during their work time and often meant eating lunch at their desks. The participants described these timescapes as normal and not allowing for non-work related tasks such as taking walks at lunchtime. This often resulted in participants working through their lunch and being desk-based. The LUMO was used to document evidence in this regard:

“It would buzz at me from time to time, and I would think, ‘Oh yes, I better do something’, and I would do something. But sometimes I would ignore it and sometimes I’d stand up or walk about, but then there were times I didn’t move much. I’d look at the app and be shocked at how much I actually sit at work!” (James, interview 2)

The participants adopted what Rooksby, Rost, Morrison, & Chalmers (2014) define as ‘documenting’, in that they “documented their activities rather than changing them” (p6.) They used the LUMO to *document* their sitting and to monitor for how long they had been sitting. For the majority, changing their activities was not possible because of their work rhythms, which was also discussed by Hadgraft et al. (2016), in that any break will eat into valuable work time. Thus, sitting is considered normal in the public health literature and for the participants in this study, since changing this routine is difficult. The office participants did not use the device to engage in typical self-surveillance; rather they employed it in a way that turned the surveillance element onto the workplace and documented the amount of sitting imposed on them (Lupton, 2013a). Moreover, they used it to get a sense of how long they sat at work and to critique the pace thereof and the lack of breaks, both amongst themselves and in the interviews.

Charlotte’s example is a little less about documenting and more about her perception of sitting, and her engagement with it, changing:

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

Charlotte looked at the app and realised how much time she spent sitting, something she was not aware of previously. This was not a planned activity necessarily to document sitting, though, as she did not look to see how bad her sitting had become. In this way, the device demonstrated the amount of sitting she did at work, of which she was unaware beforehand,

and thus changed her perception of the practice and made her realise the extent to which she sat.

Derek exhibited a practice which comes close to but is not entirely what critical literature on surveillance calls ‘sousveillance’:

“Basically, it encouraged me to finish the meeting quickly. If it was with my team, I’d say, ‘Look, we’ve been sitting for 60 minutes straight now, I’ve been sitting too long, now let’s get up’” (Derek, interview 2)

Derek engaged in resisting surveillance, or surveillance from below, by attempting to speed up his existing work rhythms. He explained how he used the self-tracker device to indicate he had been sitting too long in a meeting, thus communicating that he should stand up.

These excerpts can also be understood as a form of soft resistance, which Nafus, Dawn, Sherman, Nafus, & Sherman (2014) see as an alternative way of working with data by using it to highlighting that they should stand up during a meeting. The participants used the data obtained via the application to demonstrate the sitting statistics counted whilst at work, thus using the tracker as a tool to critique their work-life culture for making them sit so much. This example contradicts the public health literature, which argues that people find it difficult to reduce their sitting in the office, which for Derek may not have been the case.

In most cases, the participants did not engage with ‘sousveillance’, as they did not use the technology in unintended ways; instead, they simply started to track their sitting and noticed that they were doing a lot of it. They saw this as eye-opening and related it to both their work and health, noting how bad it was that they would sit so much at work. They also noted how nothing could be done about it, and so they did not actively engage in Rooksby et al.’s (2014) documenting practice but ended up doing so whereby they used this observation to pass

critical commentary on how bad work had become over time. Whilst the findings are similar to those in the current health literature, maintaining that it is difficult to sit at work, our participants observed that work was to blame for this impasse and therefore the onus was on changing work to its previous timescape.

7.6.3 PARTICIPANTS' REFUSAL TO MONITOR IN THEIR FREE TIME

The last theme draws on Thompson's (1967) discussion on work and free time, in that the participants saw self-tracking as belonging only to work time and thus did not use it in their free time:

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

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

The participants discussed putting the self-tracker on before work and removing it when they returned home, a ritualistic act that transitioned them from their work timescape to their free time. This formulaic act was a result of feeling surveyed and monitored whilst at work.

Increased workloads meant that they were being checked up on whilst in the office, and they were unable to leave or take breaks from their desk as easily as before:

"I can't leave the office like I used to, our calendars have to be up to date and detailed about where we are at all times. If I'm not in the office, my calendar has to say why" (Theresa, interview 1)

“They’re much harder about when we get in and leave. I work hard, but sometimes I’d leave early or finish at lunch... I can’t do that anymore” (Nina, interview 1)

At work, the participants were dominated by their work rhythms and controlled by pressure and monitoring, which they did not want to continue during their time at home. As such, interestingly, even when encouraged to do so, they mostly did not wear the tracker outside of working hours, as they felt it was a surveillance and monitoring tool that was watching them, and therefore it became associated with work only:

“I wanted to be able to do what I liked without LUMO clocking up my steps”
(Theresa, interview 2)

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

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

The participants felt free to engage, or not, in anything they wanted to do during their non-work time, but they wanted to do this without the surveillance of LUMO. Therefore, self-surveillance associated with the apparatus became associated with work. Moreover, they did not engage in what Lupton (2013b) defines as self-surveillance, as they did not completely reject the LUMO technology given to them; rather, they chose to use the device during work time only.

It should be noted that another timescape existed for the participants in our study during their

free time, and this did not rely on clock- or task-orientated time. Instead, they felt free to do as they liked during their free time, as they believed neither a clock nor a task could control them; instead, they chose leisure or free time over this controlled element of time:

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

“The last thing I wanted after a long day at work was something else checking up on me and telling me what to do. Work gives me enough of that at the minute and my evenings and weekends are for me” (Theresa, interview 2)

This timescape did not rely on clock- or task-orientated time, but instead it was a way for the participants to explain that they valued their free time and wanted to enjoy it without the LUMO disturbing their temporal rhythms; as such, they did not wear it. Similar to the participants in Hand & Gorea’s (2018) study, who acknowledged the times they did not want to be tracked (e.g. non-exercise days, bad food-eating days), the participants in this chapter did not want to be tracked in their free time. The contributors to their study did not want to feel inadequate and thus chose not to track at these times; however, in contrast, our cohort merely felt they would not benefit as much from collecting data during their free time compared to their work time. Many also felt that the device was like being dominated by the clock at work, and so they felt they needed a break during their free time. In this way, it became a timescape purely for them, and not for the self-tracking device. Their refusal to use the technology at particular times demonstrates Wyatt’s (2003) argument that non-users matter, too. Wyatt contended that non-use of technology is important, in order to identify the voluntary rejection of technology and explanations for non-use. Non-users are important in

understanding the meanings of technology, and for this chapter they help us understand the ways in which these participants chose to be non-users during their free time, and adopt a timescape for them:

“I parked further away from the office at work, but at the weekends I also try to find the space closest to the shops! I guess it’s because it’s my own time”
(Theresa, interview 2)

“I get so little free time that I want to make the most of what I do have! That sort of meant not wearing the LUMO” (Lisa, interview 2)

Free time was considered precious by the participants, who wanted to savour and ‘save’ as much of it as possible and prioritised things they enjoyed doing. The rhythms of their free time tended to be slower and much more relaxed, compared to their working rhythms.

Furthermore, it was often described as being more active than work time, which contrasts with health literature, which argues that those who have sedentary jobs are also sedentary in their spare time (Clemes et al., 2014). The participants felt they adopted healthier rhythms during the evenings and on weekends, and as such they did not feel they needed the assistance of LUMO. Work rhythms restricted their ability to get involved in healthy activities, whereas their free time rhythms did not do so; thus, they did not see it as a problem, but rather, the problem was work time:

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

“I didn’t really wear it at night, because I wanted a break, but I wore it one night, and when I did we didn’t really watch TV; we did things round the house instead,

like cleaning and stuff... it's good because we ate fewer sweets, we didn't just sit there stuffing our faces" (Noah, interview 2)

Some activities that were considered merely a health benefit or something they *had* do during work time, such as walking at lunch to take a break from their desks, were considered fun pastimes during their spare time, and they chose to do these as part of their free time rhythms. Breaks such as walking during work were seen as a health benefit and useful in a utilitarian way of maintaining their health. However, physical activity, such as walking, during free time was seen in hedonistic in terms of being enjoyable.

The participants indicated how the meaning of sitting and physical activity changed, depending on which timescape they were talking about. They recognised that unlike their free time, which most considered active, work time was making them inactive. They didn't see their health or activity levels as a problem during their free time, and many justified their non-wearing of the LUMO on this factor, as they did not want the device disturbing their temporal rhythms, and as such, they did not wear it.

7.7 DISCUSSION

The temporality and rhythms framework allows us to explore the ways in which self-tracking shapes time, and the ways in which individuals attribute meaning to this notion. This has enabled us to look at the everyday temporalities within the workplace and how these may influence self-tracking use. The framework has also helped establish the different temporalities and rhythms that exist in the workplace. The current chapter has used the concepts of biographical time and rhythms to help decipher the changing nature of the workplace and the distinction between work time and free time rhythms.

I have shown how tracking sitting time is related to other broader temporalities. One of these is biographical time, which in this case does not refer to individual life biographies but more to institutional or workplace biographies, which are seen as becoming increasingly pressured and “sped up.” As a result, how participants understood their past influenced the way in which they perceived the present and related it to monitoring their sedentary behaviour. The participants described previous better days at work and felt the work environment was worsening as a result of technological or organisational changes, both of which sped up the pace of work. Previous health literature has emphasised the difficulty in reducing sitting at work, which was discussed by our participants as a contributory factor to their high levels of sitting (Cole, Tully, & Cupples, 2015b; Hadgraft et al., 2016).

The participants reminisced on a previous time at work by talking about their workplace sitting beyond the immediacy of their current sitting time, drawing on stories from their past when they were able to move freely in and around the office and take small breaks from their work by walking to the printer and conducting face-to-face meetings. This shaped their engagement with the device, in that they remembered times when they could do things; this change in activity was a result of increased workplace pressure. The participants in this chapter felt unable to use the device as encouraged to do so, but they suggested that a previous timescape would have allowed them to engage with it fully. Whilst both the COPD patients and the office workers felt constrained, the office workers were not mournful like the COPD patients; rather, they expressed discontent and used the interviews as an opportunity to complain about their current working conditions.

Biographical time uncovered their use of the self-tracking device as a tool for critiquing or documenting this work culture. Their fast-paced work rhythms were considered the reason for being unable to engage in small breaks and non-work related activities. They were somewhat critical of self-surveillance, but only during their free time, which they argued

belonged to them (Lupton, 2013a). During work, they used the tracker to gain a sense of how much they were sitting and to critique the pace and lack of breaks, which became eye-opening for them. Whilst it can be argued that they adopted Rooksby et al.'s (2014) 'documenting', for the majority of them it was not planned activity to necessarily document what they were doing in this regard, as they did not consciously open the app; consequently, it was primarily a shock for the majority. They also did not really engage with 'sousveillance', as they did not use the technology in unintended ways. Instead they tracked their sitting and noticed that they did this quite often, which was something they could do very little about. In this way, they used the LUMO to observe sitting and to pass critical commentary on how bad work had become over time and how discontented they felt. Whilst the findings are similar to those in the current health literature, arguing that it is difficult to sit at work, our participants observed that work was to blame for this impasse, and therefore the onus was to change it back to its previous timescape.

Lastly, separation between work and free time was discussed. The participants mentioned being dominated by work rhythms and controlled by the pressures of work and monitoring, and so as a result they chose not to use the self-tracker during their free time. Whilst the participants did not engage in their free time with what Lupton (2013b) considered self-surveillance, they did not completely reject the technology altogether, as it was still adopted whilst at work. This monitoring became associated with work. The participants wanted to enjoy their free time without their temporal rhythms being interrupted. Hand & Gorea's (2018) study revealed that some of their participants chose not to track during certain periods, as they did not want to feel inadequate. In contrast, the participants in this chapter merely felt they would not benefit as much from collecting data during their free time, which they considered active. They also felt that they needed a break from the dominance of the clock at work, and so any spare time became something purely for them, and not for the use of the

LUMO, which demonstrates the argument put forward by Wyatt (2003) on non-users also mattering. Many participants in this study articulated that they were active during their free time, which differs from studies which suggest that those who sit during their work time are also prone to a good level of inertia out of work (Clemes et al., 2014; Thorp et al., 2012).

This chapter has used a temporality and rhythms framework to examine the self-tracking of sitting in a workplace. This opens up a new perspective on sitting and self-tracking that seeks to understand how people perceive behaviour and behavioural change in the wider contexts of their past, present and futures as well as their everyday times and rhythms.

The temporality and rhythms framework allows us to explore more than just behavioural change and health issues, as we can also look into the ways in which self-tracking quantifies and shapes time, and the ways in which individuals attach meaning in this regard.

Consequently, this has enabled me to look at everyday temporalities within the workplace and how these may influence self-tracking use. Furthermore, the framework has helped us explore the different temporalities and rhythms that exist in the workplace, that go beyond changing behaviour or quantifying sitting, and to look at the ways in which self-tracking seeks to change the meaning of time or how different timescapes shape individuals' use of self-tracking.

In conclusion, this chapter has evidenced that these participants adopted a critical stance in terms of tracking in their free time, in that they decided not to use the device and contended that self-surveillance and tracking were not something in which they wished to indulge when out of work. In addition, they also creatively adopted the device to document workplace sitting, arguing that the workplace was a problem in this respect. Thus, my participants demonstrated how they engaged moderately with the device to complain about their workplace discontent about losing a certain level of autonomy and independence.

As a result, the tracker was employed to demonstrate the fast-paced and stressful work environment that hampered them from reducing how long they sat down.

This chapter has therefore demonstrated that the framework of temporality and rhythms helps to capture the notion that sitting in the workplace stems beyond a health issue and resonates with the biographical temporality of our past, the institutional temporality of our workplace and the change in rhythms, pace and habits between our work time and free time.

CHAPTER 8 CONCLUSION

This thesis examined two studies that sought to decrease sitting in participants by using a self-tracking device. I demonstrated how the ninety interviews I conducted and analysed helped to highlight how the concepts of meanings, temporality and rhythms can be used to explore sitting and self-tracking. These concepts allowed me to explore the experiences that COPD participants and office participants had with using a self-tracking device that was given to them to encourage sitting less. I contend that the originality of this thesis derives from combining these concepts, which permitted me to establish how these two participant groups' reduction in sitting and use of a self-tracking device were shaped by their experiences of time biographically (in terms of their past, present and future), institutionally (the works clock time dictated their engagement) and in terms of the changing rhythms of everyday life, which were influenced by pace and place.

By looking at the meanings associated with sitting, I was able to understand the lived experiences of the participants and what they associated and understood by the term 'sitting'. Similarities can be found by deducing the meanings and perceptions of sitting; however, whilst 'perception' refers to the impression of something (Collins English Dictionary, 2018), 'meanings' involves a slightly different approach which seeks to make sense of the participants in their own world and capture their everyday experiences. I refer to perception studies to inform my work (Mcewan et al., 2016) and highlight how the meaning of sitting was understood differently by participants, by identifying three different factors for COPD participants. For some, it allowed them to perform activities or chores and provided them with normality and independence. In addition, others enjoyed sitting, as they relaxed or partook in activities and justified this by stating that they were doing something meaningful in addition. Kikuchi et al. (2014) also made this argument when categorising active and

passive sitting with health issues, by using surveys. However, the impetus for this differed to my study, as I did not seek to categorise sitting; instead, I wanted to determine what it meant to participants, who were granted the freedom to discuss their experiences and lives. In addition, there were also COPD participants whose meanings of sitting were associated with sadness and resignation to their illness, as it was all they could do.

In exploring the meanings these participants attached to sitting, I was able to investigate it in a slightly different methodological way to the existing public health literature (Kikuchi et al., 2014; Mcewan et al., 2016), in order to gain an in-depth understanding of the experiences of sitting and the ways in which it featured in the participants' lives.

In addition, by studying this particular population group, I present findings that I contend could be incorporated into sedentary behaviour guidelines. These findings include the association of sitting with values besides health, such as sitting as pleasurable and enjoyment of life, which for this population group who have a progressive and chronic disease, may be of particular importance. Therefore current sedentary behaviour guidelines should appreciate other values beside health as this may help increase success rates of current public health guidelines and initiatives.

The meanings associated with sitting meant something different to the office participants, depending on whether or not they referred to home or work. Work sitting meant a highly pressured and stressful environment; conversely, home sitting was referred to as relaxing and comfortable. Consequently, the majority of them did not want to track their sitting at home, as they felt this was a place of freedom and where they could do what they wanted. In contrast, reducing their sitting at work was difficult, because of the highly stressful environment.

The meanings associated with sitting therefore allowed me to explore what it meant to these two groups of participants in terms of temporality and rhythms. These two concepts helped to decipher the ways in which they saw sitting in relation to time and temporality, and place, by citing literature provided by Adam (1995) and Lefebvre (2004) to help with a conceptual framework. I collated these concepts to unravel the ways in which reducing sitting and self-tracking were related to time, pace and place. Furthermore, they established experiences of time and the connection between the COPD participants' health and the office participants' workplace. Whilst temporality alone helps to explore experiences with time and the ways in which health or illness or work influence this factor, rhythms enable one to view time through everyday life habits and routines, which are dictated by pace and place. Thus, used together, a broader picture of the experience of time, pace and place becomes evident.

The temporality of these two participant groups differed. Biographical temporality underpinned the COPD participants, whose illness tended to navigate their lives. Many of them looked back on their past and either reminisced about happy memories or mourned their previous lives. Those COPD sufferers whose meanings of sitting were associated with enabling them to perform activities tended to look to their potential futures in a positive light and felt optimistic about getting better. In contrast, the mournful sitters saw no future for themselves, which resulted in them sitting and despairing. The severity of their illness thus influenced whether or not their biographical temporality of the past, present or future influenced their engagement with self-tracking or with sitting less, whereas enabling sitters tended to try to engage with sitting less and the self-tracking device, mournful sitters felt less able. Those whose meanings of sitting resonated with satisfaction were also underpinned by biographical temporality. On days perceived as 'bad', they emphasised the need to relax or recover, while conversely their 'good' days were dominated less by biographical temporality,

and therefore their ability to do more increased. Thus, biographical temporality controlled their activity levels, which resulted in less movement and more sedentary behaviours.

Biographical temporality also influenced the office workers, in that it caused them to look back on previous happier days at work, where they were able to make time for themselves or their health. These participants discussed being dictated to by clock time, resulting in an inability to engage with the self-tracking device as they originally wanted to do. In addition, the institutional context of work, which did not seem to encourage the participants to sit less often, caused many of them to document their sitting, whereby the self-tracker was used to provide evidence of how much they actually sat while working. They were therefore controlled by an institutional temporality of work as well as a biographical temporality, as actions were dictated by the institutional and political realms of the workplace. To determine these participants' engagement with the self-tracker, I referred to the social science literature on self-tracking, which explored its creative and ordinary uses for finding meaning in their lives (Rooksby et al., 2014). This literature helped provide information on tracking use and engagement. In addition, I also engaged with the critical social science literature on self-tracking, to help make sense of the office participants' refusal to self-track in their free time (Lupton, 2014e, 2014b). They did not discuss institutional or biographical temporality affecting their free time or self-tracking use at home; rather, they did not want to self-track, as they felt the home should be a surveillance-free area and that the tracker was a monitoring tool.

Thus, the office participants' temporalities differed to those of the COPD participants, because unlike the latter, whose biographical temporality was dictated by their illness, for the former it was institutionally dictated by work. These temporalities influenced their everyday rhythms, as their habits and day-to-day lives were interrupted by a self-tracker seeking to interrupt their existing temporalities and encourage them to sit less often.

Biographical rhythms often caused disruption or arrhythmia to occur for the COPD sufferers, as symptoms such as breathlessness caused disruption to their everyday lives. For many of them, this resulted in needing to sit, in order to recover or recuperate. The participants' experiences with the self-tracker and reducing sitting, however, were different and varied depending on their day-to-day rhythms. Those whose meanings of sitting enabled them to perform activities experienced faster-paced rhythms compared to those whose meanings resonated with mournfulness and sadness. The enabling sitters often attempted to sit less often, which meant a change to their existing rhythms so they could reach euthymia and often resulted in them getting up when interrupted by the self-tracker. Those whose meanings were associated with satisfaction often engaged with the self-tracker but tended to do so when their existing rhythms did not have to be altered. Thus, for this group, the interruption had to tie in with their existing habitual routines; otherwise, they did not consider the interruption, or arrhythmia, meaningful or valuable to their lives. The mournful participants experienced a complete fragmentation of their rhythms, in that they did not abide by their cyclic rhythms, and day and night merged into one. Consequently, their timetables collapsed, and their illness caused them to disengage with any form of habitual rhythm. This greatly influenced their ability to reduce their sitting or to self-track and resulted in many dropping out of the study, due to the severity of illness and being unable to cope.

The office worker participants' rhythms were different. Their habitual work rhythms influenced their ability to self-track, as work encompassed a stressful and highly pressured environment, and they found it difficult to respond to the standing prompts, as they disrupted these work rhythms. The self-tracker therefore caused arrhythmia to their working days. Furthermore, the fast-paced workplace meant that they were unable to add new rhythms to their day. They used the self-tracker to provide evidence in this regard, documenting the sitting they did at work to demonstrate how much their jobs caused them to sit. In contrast,

they viewed the rhythms of home as relaxed. Home was considered a place of freedom, and they did not want to be interrupted by a self-tracker during this peaceful time and so chose not to wear the device. Lupton helped to make sense of these experiences, as my participants were critical of engaging with the device outside of work. I used Lupton to clarify the idea of self-tracking as a surveillance tool, as these participants chose to disengage with the self-tracker whilst at home. The concept of rhythms therefore helped highlight how these two participant groups engaged in different habitual routines and experienced life at different speeds and intensities. In addition, rhythms also provided a way of exploring the self-trackers' interruptions and the ways in which they dislocated existing rhythms.

I have provided a novel approach to researching sitting and self-tracking which goes beyond health to encompass the context specificity of sitting, including the social, personal and institutional factors, as discussed by my two participant groups. In addition I have argued that sitting is often associated with values that go beyond health, such as, laziness, ability, enjoyment, sadness, home, comfort, work, which demonstrates that we should appreciate these other values and that these should be incorporated into future public health guidelines on sedentary behaviour.

Furthermore, this thesis has brought together the literature on public health, self-tracking, meanings and experiences, aligned with rhythms and temporality, to explore sitting and self-tracking in COPD and office participants. I add to the existing literature by demonstrating how sitting and self-tracking can be understood in terms of temporality and rhythms, which I argue stems from exploring the meanings of sitting. This thesis builds on public health research by exploring the meanings of sitting, which I contend alter according to place and time. In so doing, I have illustrate how the concepts of meanings, rhythms and temporality can be used to make sense of sitting and self-tracking in these participant groups.

The originality of this thesis stems from the way in which reducing sitting and self-tracking

use are explored in relation to the biographies of past, present and future, the institutional temporality of the workplace and the rhythms of everyday life, which differ in pace and in relation to place. In conducting my ninety interviews with both COPD and office participants, I was able to demonstrate how the meaning they attach to sitting, and self-tracking use, relate to their experiences with time, pace and place, and how these factors influence behavioural change.

8.1 LIMITATIONS AND FUTURE WORK

The main limitation of this work was the inability to analyse the thirty-three healthcare interviews that I conducted. Whilst time constraints meant that this was not possible, I did consult these interviews in order to gain a better idea of self-tracking experiences vis-à-vis healthcare staff.

In addition, it would have been interesting to draw on the experiences of other participant groups, and to establish how the concepts discussed herein might influence their sitting and self-tracking use. Thus, future studies could explore these concepts in relation to other participant groups, which could include other cohorts experiencing chronic illness, or other work-related contributors. In addition, these concepts could be used to explore other health-related issues such as physical activity.

Lastly, future studies may gain from exploring this subject matter by using different methodologies such as ethnography, which could help capture the practices of sitting and self-tracking as they occur and may better inform participants.

8.2 CRITICAL REFLECTIONS

Next I turn my attention to working in a multidisciplinary team and use this section to provide insights into collaborating on a research project.

The first of my doctoral studies involved working within a multidisciplinary team. This, as discussed, brought with it numerous opportunities to create a mixed methods study giving us the ability to merge both quantitative and qualitative expertise. However working within a multidisciplinary team also brings with it numerous challenges and I wish to critically reflect upon these in order to assist others entering into a multidisciplinary team for the first time.

The biggest challenge of working within a multidisciplinary team is reaching consensus. On many occasions compromises had to be made in order for all team members to be content with decisions. For example; deciding if the control group should be interviewed. These decisions have to be reached together as they affect the dynamics of the study; however the practicalities of additional interviews had to be considered as it would take more time to interview and transcribe these. In addition when making decisions the overall study aims needs to be considered, in regards to the control group interviews it was decided that these additional interviews would not benefit the overall study enough to warrant additional time spent on interviews and transcripts.

A tension that arose during the planning process of the study was in regards to the interview schedule. As I was responsible for the qualitative aspects of the study, the interview schedule was originally created by myself with the help of my supervisors, and then distributed to the remainder of the team. However following distribution, discrepancies arose surrounding the questions asked and wording chosen. Each team contributed to the interview schedule in some way, suggesting questions which aligned with their teams overall study aims for example for myself and my supervisors the contextual aspects of the interview were

important (what they thought of sitting, typical good and bad days, living with COPD) whereas the other half of the team placed more emphasis on the feasibility of the study (thoughts on sitting less, self-tracking device, study overall) as this was the overall studies remit. However the main responsibility of the qualitative team was to design the interview schedule and conduct the interviews. The schedule was created in such a way to ask open-ended questions allowing participations to tell stories and discuss their lives openly. In addition there was also a suggestion to delegate the role of interviewer to an addition researcher as a time saving technique. However myself and the remainder of the qualitative team felt that to do so removes our status as qualitative researchers and therefore renders our skills redundant. Thus whilst team inputs are essential during the planning process and throughout in order for everyone to distribute their ideas, and a team spirit is vital for multidisciplinary work, I suggest trusting individual research responsibilities and expertise.

Finally I move on to representing findings. The overall study was to explore the feasibility and acceptability of such a study and part of my role as qualitative interviewer was to explore this in the interviews asking and discussing what participants felt and thought about the study and its components. For my own thesis I was interested in capturing the lives of the participants and exploring sitting and self-tracking in terms of their illness and wider lives. The study overall produced a multitude of interesting findings; many of which are discussed in this thesis. However the findings I present discuss the meaning the participants had with sitting and how their illness hindered sitting less and self-tracking use altogether, or when it was not considered meaningful for them. In this way my opinion on the findings are that the study was often difficult to engage with for the participants, and whilst we can observe one motivated to sit less participant, the remainder did not follow suit. I therefore recommend bringing together the findings following a multidisciplinary study and discussing how these

i.) have been interpreted by all team members, ii.) will be represented and iii.) what they mean in terms of the study aims and remit.

I have aimed to demonstrate a deeper critical reflexivity in terms of my experience of working within a multidisciplinary team. I have highlighted tensions that arose and how, as a team, these were navigated. In addition I have provided some lessons for those about to embark on multidisciplinary work to consider. Whilst I have noted tensions that may have arose, I wish to add that one of the most rewarding endeavours I embarked on during the process of my PhD was working with this multidisciplinary team, as it gave me a unique opportunity to meet some interesting and brilliant academics and gain a wealth of experience.

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APPENDICES

APPENDIX 1: COPD-SEAT PATIENT INTERVIEW 1 SCHEDULE

1.) Self

- **Tell me a bit about yourself.**

Prompts, if needed

- About yourself and things that are important to you/what you like to get up to/enjoy
- Family life: who you live with, your family, your home, your pets
- **Tell me about your everyday life. What you do from morning to bedtime.**

2.) COPD

- **Talk to me about your COPD and how it affects your life.**

Prompts, if needed

- Daily tasks, activities? Emotions?
- How do you manage this?
- What are you advised/told?
- What do you do when you feel breathless?
- **Can you tell me about any support you receive for your COPD? How does your condition affect them?**

Prompts, if needed

- If live alone: do family/friends visit your home? How do they experience your COPD? How do they support you?
- Live with spouse etc.: how do they experience your COPD? How do they support you?

- **Can you describe a typical “good” day to me?**

Prompts, if needed:

- What activities do you do on a good day?
- Are there things you do on good days that you can't on bad days?
- **Can you describe a typical “bad” day to me?**
 - Is there anything that you do on these days to help you feel better?

3.) Sitting

- **If I mention the word ‘sitting’, what comes to mind?**

Prompts, if needed

- Can you tell me a little bit about this – what do you think of sitting?
- Why do you sit?

- Typical times or situations when you sit for a long while during the day?
 - **What makes you sit?**
 - How does sitting make you feel?
- **This study tries to encourage people to sit less often. How do you see that fitting in to your everyday life?**

Prompts, if needed

- Do you think targeting your sitting is appropriate for this time in your life? Why/why not?
- **How do you think it would make you feel?**
- **How do you think it will affect your normal life?**
- **Do you feel it is worthwhile finding out about your sitting/inactivity levels?**

4.) Study

- **What influenced your decision to take part in this study? What do you hope to get from it?**

Prompts, if needed

- Role of friends/family/healthcare professionals.
- Why did you decide to take part?
- Have you ever had any experience of your health being monitored at home/in hospital?

Prompts, if needed

- How did you find it? What are your thoughts?
- How did you respond to it?
- What did it involve?
- Have you ever searched for information yourself? Where? What for?
- If no, can you tell me why that might be?
-

- **Tell to me about what my colleague talked to you about.**

Prompts, if needed

- Sitting?
- Leaflet?
- What about the technology?
- Tell me how things were explained to you.
- What did he tell you? Did you understand?
- What did you think?

5.) Technology

Feedback group only.

- **Can you tell me about how you use technology (computers/internet/mobile phones/wearable devices)?**

Prompts, if needed

- What do you use? How? What for? How often?
 - Used for health, e.g. to track steps or diet or anything?
 - Describe to me how it has helped you.
 - Has it changed anything for you? Influenced your behaviour in any way (to do things in a different way e.g. shopping)?
 - Difficulties experienced? Stress, annoying, novelty?

 - Non-use: what do you think the reasons are for you not using them continuously/every day?
How would you feel about using them?
- **As part of the study, my colleague showed you a belt that you have been asked to wear that will vibrate when you have been sat for a long period of time. How does that sound to you?**

Prompts, if needed

- What do you think of that? The idea?
 - How do you think you'll get on with this?
 - What do you think of the vibration?
 - Do you think it will fit in with your everyday life? How/why?
- **The belt also sends information to an iPod about how long you have been sitting and standing every day and how many times you have gotten up. What do you think about that?**

Prompts, if needed

- Immediate reaction?
 - How do you think this will fit in with your everyday life?
- Any concerns with anything? The technology?

General experience with intervention

- **Tell me how the last two weeks have been for you.**
 - How has your COPD/breathlessness been?
 - What have you been up to?

- **Can you tell me about your sitting over the study period?**

Prompts, if needed

 - Tell me about ways you tried sit less often.
 - Can you give me any examples of this?
 - When did you sit? Why? Did you do this before?
 - **Did you sit less often at particular times or on particular occasions?**
 - How did this make you feel?
 - Did you experience any problems?
 - Can you tell me if you changed your everyday life?
(if they didn't change anything)
 - a.) Why might this be?

- **Based on interview 1: In the first interview, when I asked you about typical times you sit during the day, you said you (sit to enable you to do things/you sit because you like to relax and watch TV/read/ you sit because you're feeling poorly/tired etc)**
 - How do you feel about this now?
 - Can you tell me if you still feel the same? Why? Tell me about this

- **The data from the app shows that.... What do you think of this?**

- **What did your family/friends think of this? Did you speak to anybody else (e.g. family, friends, carers) about the study?**

Prompts, if needed

 - How did they feel about it?
 - Did they help? How? What did they do? How did they get involved?
 - What did they think of the education leaflet? Did they read it?

Experience with educational advice

- **You were given a leaflet giving you tips to sit less often/ Do you remember this?**

Prompts, if needed

- What do you remember from it? What did you use? How did you use it?
 - **How did you get on with it?**
 - Did you find any of it useful? Which bits?
 - **Education group ONLY: You have also been wearing a belt like device. How did you get on with that?**
Prompts, if needed
 - **What did you think of the belt?**
 - How would you feel about this device vibrating to remind you to stand up? What do you think of that as an idea?
 - Tell me why/why not?
- Prompt if needed:*
- Can you tell me if you think this would help in your everyday life?

Experience with technology

- **Can you tell me how you got on with the belt?**
 - **What did you think of it?**
 - **How did you find wearing it?**
 - When did you wear it/take it off?
- How did you get on with the vibration prompts?
 - What did you do when the belt vibrated to tell you to stand?
 - Why was this? Can me about that. What was going on at this time/in your life?/that day?
 - How were you feeling that day?
 - What did you think of that?
 - How did it make you feel?
 - What influenced your decision to set it to vibrate every ? / what do you think of this timing now – fine/too much/too little?
- Can you tell me how you got on with the visual information on the iPod?
Prompts:
 - When did you look at it? How often?
 - Why is this?
 - Did you find anything on it interesting? What in particular? How come? What did you make of it?

- Do you want to show me how you used it?

Overall study experience

- How do you feel about a device like this helping you reduce you're sitting?
 - Did it help? Work? – Why /not?
- Can you tell me what would help you to reduce your sitting? (Could be outside of technology)?
 - Tell me about that? How come why?
 - Incentives?
 - Pets?
 - Reminders?
 -
- What do you think does help you sit less often?
 - Why this? Explain that to me?
 - Being alone?
 - Pets?
 - My hobbies?
 - Have to do things e.g. domestic chores?
- **What do you think you will take away from the study?**
Prompts, if needed
 - If yes: what will you do? How will you do this? What will help you with this? Will you continue to use the technology/educational tools? How?
 - If no, why is this?
- Do you feel it was worthwhile to find out about your sitting time?
 - elaborate
 - Why?
 - Anything you thought was useful/beneficial?
 - Anything you would change? / to make people with COPD sit less often?
- **What do you think you would of done at home, if you haven't been part of the study?**
 - Would you have done anything different? I.e. sit more?
 - Difference: so what do you think the benefits were for you of being part of it?
 - No difference: so tell me why you think this is?

- **How did you feel about being approached in hospital and having your health monitored at home?**

Prompts, if needed

- Positives/negatives
- When would a better time be? Why?

1. **To get us started, could you briefly tell me about your role and the sorts of patients do you deal with?**
- **What sort of advice do you give patients to help support their recovery? – (regarding lifestyle in general, when they get breathlessness, health, PA, sitting?)**

Prompt if needed

- Exacerbations: how do you encourage them to manage their exacerbations? / e.g. what are they told to do when they feel breathless? (meds, exercise, sit?)

2. **How have you found patients respond to this advice?**

Prompts, if needed

- Can you give any examples or experiences you've had?

3. **How do you understand the phrase –physical activity? What about sedentary behaviour in relation to COPD patients?**

Prompts, if needed

- Exacerbations: how do you encourage them to manage their exacerbations? / e.g. what are they told to do when they feel breathless? (meds, exercise, sit?)
- Not breathless when sat: tell me more about this? How often do they feel breathless? What are they encouraged to do when they feel this way? How do they react to being breathless?

4. **Myself and my colleague have been conducting a study on the wards encouraging COPD patients to sit less often. Can you just tell me what you know about this/ anything you may have heard/be aware of?**

Prompts, if needed:

- Have any patients mentioned anything about this to you?

[Show them the LUMO and app] We are asking patients to wear this device which will vibrate and remind them to stand when they have been sat for a set amount of time.

- a.) **What do you think of this?**

Prompts, if needed

- Can you tell me how the severity of their condition may affect them?
- How do you think they will respond to the technology? (LUMO and ipod)
- The app
- The vibration prompts

- Any barriers they might come across?
- b.) How do you feel about the technology?**
- c.) Can you tell me about the use of technology in general in an NHS setting?**
- 5. When do you think is the best time to approach patients for this type of study?**
- Would there be a better time instead of immediately after discharge?
 - When/ why?
- 6. What do you think of the study being delivered/run by none healthcare professionals?**
- Prompts, if needed*
- *Do you see yourself doing it?*
- 7. Do you think a device that has similar features to this could be incorporated into their usual care? (Smaller, invisible device etc, the concept).**
- Prompts, if needed:*
- Would it add value to their usual care?
 - Why? What are your first impressions of the device?
 - -CODP specifically?
- 8. Do you have any recommendations or anything you suggest we change?**

Thank you for agreeing to a second interview. Just as an opener, what was your experience with the study?

Prompts, if needed:

- Did you pick up on any concerns?
- Did you have any concerns with the study?
- How do you think the patients felt about the study?

2) In the first interview we talked about how patients might get on with the device.

a) How do you think patients got on with the device? Have you heard anything?

Prompts, if needed:

- Do you think they used it?
- What about the prompts?
- The feedback on the app
- General wear
- General use e.g. charging

3) Now the study is coming to an end, what are your thoughts on something like this helping COPD people sit less often?

Prompts, if needed:

- Would it add value to their usual care?
- Would you encourage something like this? See self-doing this, delivering it?
- Benefit?

4.) Do you think there are any particular reasons why patients may not take part or may drop out during the study?

5.) When do you think is the best time to approach patients for this type of study?

- We approached after discharge, would there be a better time?

6.) If a study like this was to be included in the patient's usual routine care, what suggestions would you have to make it work?

APPENDIX 5: COPD-SEAT WITHDRAWAL INTERVIEW SCHEDULE

- 1.) How did you feel about being asked to take part in the main trial?
- 2.) It is important for us to understand why some people might not want to take part in studies so we can better design them in the future. Could you tell me what your main reasons for not taking part were?
- 3.) Were there any parts of the study in particular which did not appeal to you? Have you taken part in any research studies in the past? If so, can you tell me about them?
- 4.) Do you think the timing of the intervention is appropriate for trying to reduce the time people spend sitting down?
If not: when do you think would be a more suitable time to be approached?
- 5.) What are your thoughts regarding reducing sitting time? Do you think sitting makes your COPD better or worse? Could you tell me about it?
- 6.) What could we have done to make the trial more appealing to you?

APPENDIX 6: OFFICE WORKERS STUDY: ETHICAL CLEARANCE CHECKLIST

Ethics Approvals (Human Participants) Sub-Committee



Ethical Clearance Checklist

Has the Investigator read the 'Guidance for completion of Ethical Clearance Checklist' before starting this form?	Yes
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Project Details

1. Project Title: Exploring office workers' experiences of a wearable self-monitoring tool for reducing sitting time.

Applicant(s) Details

2. Name of Applicant 1: Amie Weedon	10. Name of Applicant 2: Paula Saukko
3. Status: PGR student	11. Status: Staff
4. School/Department: Social Sciences	12. School/Department: Social Sciences
5. Programme (if applicable): Click here to enter text.	13. Programme (if applicable): Click here to enter text.
6. Email address: a.weedon2@lboro.ac.uk	14. Email address: p.saukko@lboro.ac.uk
7a. Contact address: Department of Social Sciences Loughborough University Leicestershire LE11 3TU UK	15a. Contact address: Department of Social Sciences Loughborough University Leicestershire LE11 3TU UK
7b. Telephone number 07715256467	15b. Telephone number: +44 (0)1509 223357
8. Supervisor: No	16. Supervisor: Yes
9. Responsible Investigator: Yes	17. Responsible Investigator: no

Participants

Positions of Authority

18. Are researchers in a position of direct authority with regard to participants (e.g. academic staff using student participants, sports coaches using his/her athletes in training)?	No
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Vulnerable groups

19. Will participants be knowingly recruited from one or more of the following vulnerable groups?	
Children under 18 years of age	No
Persons incapable of making an informed decision for themselves	No
Pregnant women	No
Prisoners/Detained persons	No
Other vulnerable group Please specify: Click here to enter text	No
If you have selected No to all of Question 19, please go to Question 23.	
20. Will participants be chaperoned by more than one investigator at all times?	Choose an item
21. Will at least one investigator of the same sex as the participant(s) be present throughout the investigation?	Choose an item
22. Will participants be visited at home?	Choose an item

Researcher Safety

23. Will the researcher be alone with participants at any time?	Yes
If Yes, please answer the following questions:	
23a. Will the researcher inform anyone else of when they will be alone with participants?	Yes
23b. Has the researcher read the 'guidelines for lone working' and will abide by the recommendations within?	Yes

Methodology and Procedures

24. Please indicate whether the proposed study:

Involves taking bodily samples (please refer to published guidelines)	No
Involves using samples previously collected with consent for further research	No
Involves procedures which are likely to cause physical, psychological, social or emotional distress to participants	No
Is designed to be challenging physically or psychologically in any way (includes any study involving physical exercise)	No
Exposes participants to risks or distress greater than those encountered in their normal lifestyle	No
Involves collection of body secretions by invasive methods	No
Prescribes intake of compounds additional to daily diet or other dietary manipulation/supplementation	No
Involves pharmaceutical drugs	No
Involves use of radiation	No
Involves use of hazardous materials	No
Assists/alters the process of conception in any way	No
Involves methods of contraception	No
Involves genetic engineering	No

Involves testing new equipment	No
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Observation/Recording

25a. Does the study involve observation and/or recording of	Yes
---	-----

participants?	
If Yes:	
25b. Will those being observed and/or recorded be informed that the observation and/or recording will take place?	Yes

Consent and Deception

26. Will participants give informed consent freely?	Yes
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Informed consent

27. Will participants be fully informed of the objectives of the study and all details disclosed (preferably at the start of the study but, where this would interfere with the study, at the end)?	Yes
28. Will participants be fully informed of the use of the data collected (including, where applicable, any intellectual property arising from the research)?	Yes

Deception

29. For children under the age of 18 or participants who are incapable of making an informed decision for themselves:	
a. Will consent be obtained (either in writing or by some other means)?	Choose an item
b. Will consent be obtained from parents or other suitable person?	Choose an item
c. Will they be informed that they have the right to withdraw regardless of parental/guardian consent?	Choose an item
d. For studies conducted in schools, will approval be gained in advance from the Head-teacher and/or the Director of Education of the appropriate Local Education Authority?	Choose an item
e. For detained persons, members of the armed forces, employees, students and other persons judged to be under duress, will care be taken over gaining freely informed consent?	Choose an item
30. Does the study involve deception of participants (i.e. withholding of information or the misleading of participants) which could potentially harm or exploit participants?	No
If Yes:	
31. Is deception an unavoidable part of the study?	Choose an item
32. Will participants be de-briefed and the true object of the research revealed at the earliest stage upon completion of the study?	Choose an item
33. Has consideration been given on the way that participants will react to the withholding of information or deliberate deception?	Choose an item

Withdrawal

34. Will participants be informed of their right to withdraw from the investigation at any time and to require their own data to be destroyed?	Yes
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Storage of Data and Confidentiality

35. Will all information on participants be treated as confidential and not identifiable unless agreed otherwise in advance, and subject to the	Yes
---	-----

requirements of law?	
36. Will storage of data comply with the Data Protection Act 1998?	Yes
37. Will any video/audio recording of participants be kept in a secure place and not released for any use by third parties?	Yes
38. Will video/audio recordings be destroyed within ten years of the completion of the investigation?	Yes
39. Will full details regarding the storage and disposal of any human tissue samples be communicated to the participants?	Yes
40. Will research involve the sharing of data or confidential information beyond the initial consent given?	No
41. Will the research involve administrative or secure data that requires permission from the appropriate authorities before use?	No

Incentives

42. Will incentives be offered to the investigator to conduct the study?	No
43. Will incentives be offered to potential participants as an inducement to participate in the study?	No

Work Outside of the United Kingdom

44. Is your research being conducted outside of the United Kingdom?	No
If Yes:	
45. Has a risk assessment been carried out to ensure the safety of the researcher whilst working outside of the United Kingdom?	Choose an item
46. Have you considered the appropriateness of your research in the country you are travelling to?	Choose an item
47. Is there an increased risk to yourself or the participants in your research study?	Choose an item
48. Have you obtained any necessary ethical permission needed in the country you are travelling to?	Choose an item

Information and Declarations

Checklist Application Only:

If you have completed the checklist to the best of your knowledge, and not selected any answers marked with an * or †, your investigation is deemed to conform with the ethical checkpoints. Please sign the declaration and lodge the completed checklist with your Head of Department/School or his/her nominee.

Checklist with Additional Information to the Secretary:

If you have completed the checklist and have only selected answers which require additional information to be submitted with the checklist (indicated by a †), please ensure that all the information is provided in detail below and send this signed checklist to the Secretary of the Sub-Committee.

Checklist with Generic Protocols Included:

If you have completed the checklist and you have selected one or more answers in which you wish to

use a Generic Protocol (indicated by #), please include the Generic Protocol reference number in the space below, along with a brief summary of how it will be used. Please ensure you are on the list of approved investigators for the Generic Protocol before including it on the checklist. The completed checklist should be lodged with your Head of Department/School or his/her nominee.

Full Application needed:

If on completion of the checklist you have selected one or more answers which require the submission of a full proposal (indicated by a *), please download the relevant form from the Sub-Committee's web page. **A signed copy of this Checklist should accompany the full submission to the Sub-Committee.**

Space for Information on Generic Proposals and/or Additional Information as requested:

For completion by Supervisor

Please tick the appropriate boxes. The study should not begin until all boxes are ticked.

- The student has read the University's Code of Practice on investigations involving human participants
- The topic merits further research
- The student has the skills to carry out the research or are being trained in the requires skills by the Supervisor
- The participant information sheet or leaflet is appropriate
- The procedures for recruitment and obtaining informed consent are appropriate

Comments from supervisor:

Signature of Applicant: Amie Weedon

Signature of Supervisor (if applicable) Dr Paula Saukko

Signature of Head of School/Department or his/her nominee: James Stanyer

Date: 11/01/2016



Exploring office workers' experiences of a wearable self-monitoring tool for reducing sitting time.

Adult Participant Information Sheet

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Section A:

What is the purpose of the study?

This study will explore the user experiences of a self-monitoring device that vibrates and prompts users to reduce their sitting time. The device is a small light weight belt that goes around the waist and vibrates reminding the individual that they have been sitting for too long. The study wishes to explore how the users of the device experience this device in terms of reducing their sitting; what meaning do they attribute to the device/what do they do when it vibrates/what did they do with the visual feedback produced on their phones etc. Given that research has provided evidence that sitting for long periods of time is bad for the health alongside the promotion of technology in the healthcare setting; this study wishes to see how the users actually use and engage with the device as this is useful if we wish to make technology the 'solutions' to healthcare related problems.

Who is doing this research and why?

The study will be conducted by myself, Amie Weedon, under the supervision of my two supervisors Paula Saukko and John Downey who will be assisting me. This study is part of a Student research project for my PhD supported by Loughborough University.

Are there any exclusion criteria?

Participations must work in an office. The participants must have access to an iPhone 4s or later, iPod 5th generation or later, ipad 3rd generation or later or an ipad mini 1st generation or later. Whilst I acknowledge that this excludes a certain number of individuals, the application runs on IOS much more efficiently than it does on android devices. Therefore to ensure no problems with the technology arise, I am excluding those who do not have IOS access.

What will I be asked to do?

You will be asked to wear a small light weight device around their waist that monitors your sitting time and vibrates prompting you to get up when you have been sat for too long. You will be asked to

wear this for two weeks and attend two interview sessions; one before the study begins and one at the end of the study.

At the first interview session: I will conduct a short interview which will explore how you understand sitting time and will explore the context of your job in regards to how much time you spend sitting. I will briefly go over any questions you may have regarding the LUMO self-monitoring device, and give you the device. I will set the LUMO up on your device before you leave. You will also be given the option of taking a few pictures along the two-weeks that have something to do with sitting. For example the device may vibrate and you may get up and make yourself a coffee, as you take a picture of the kettle. These pictures can be used for discussion points in the second interview. However choosing NOT to take these does not exclude you from the study.

At the final interview session: I will explore how you experienced the device and this will give you a chance to explain your views/meanings of and experiences of the device. If you have decided to take the pictures we will discuss them in the interview and what they mean to you. The interview will also include looking at the app that you used during the study where we can explore what you were interested in and looked at etc.

Once I take part, can I change my mind?

Yes. After you have read this information and asked any questions you may have, we will ask you to complete an Informed Consent Form, however if at any time, before, during or after the sessions you wish to withdraw from the study please just contact the myself. You can withdraw at any time, for any reason and you will not be asked to explain your reasons for withdrawing.

However, once the results of the study are aggregated/published/thesis has been submitted, it will not be possible to withdraw your individual data from the research.

Will I be required to attend any sessions and where will these be?

You will be required to attend two interview sessions. The first is a short contextual interview and the second will be conducted two-weeks after as an evaluation and exploratory interview. These will be conducted at the building in which you work so travel is not necessary and interviews will be arranged at times and dates that are convenient for you.

How long will it take?

The first interview will be about 20-30 minutes. The second interview will also be about 30 minutes but is dependent on how much you wish to elaborate on the questions asked. Interview timelines are difficult to predict as they depend upon the participant; therefore they have the control in terms of how long they will last.

What personal information will be required from me?

The personal information you will be required to give will be your name, gender and age and information regarding your work life activities i.e. how often you take breaks that involve getting out of your chair etc. However everything will be kept confidential and anonymous.

Are there any risks in participating?

There are no risks from participating in this study.

Will my taking part in this study be kept confidential?

Any personal data collected during a study (names, ages, gender etc) including that on the Consent Form, falls under the Data Protection Act 1998. Therefore I will ensure that this data is secure at all

times, anonymously coded where possible and is not accessible to anyone outside the research team. The information will be kept for 10 years and then destroyed. Audio recordings of all interviews will be stored securely and then destroyed after 10 years.

I have some more questions; who should I contact?

If you have any questions then you should contact the main investigator, Amie Weedon via her email address.

What will happen to the results of the study?

The results will be analysed and then written up into reports, articles and my research thesis. The results may be published but all participants will remain anonymous throughout.

What if I am not happy with how the research was conducted?

If you are not happy with how the research was conducted, please contact Ms Jackie Green, the Secretary for the University's Ethics Approvals (Human The participants) Sub-Committee:

Ms J Green, Research Office, Hazlerigg Building, Loughborough University, Epinal Way, Loughborough, LE11 3TU. Tel: 01509 222423. Email: J.A.Green@lboro.ac.uk

The University also has a policy relating to Research Misconduct and Whistle Blowing which is available online at <http://www.lboro.ac.uk/committees/ethics-approvals-human-participants/additionalinformation/codesofpractice/>. Please ensure that this link is included on the Participant Information Sheet.

Section B:

Is there anything I need to do before the sessions?

Once you have agreed to participate we will arrange a suitable day and time to meet for the first interview. I will also email you a link to an application that has to be downloaded on your IOS device. We will open the link and download the application together at the first interview session so nothing is required of you before the sessions.

Is there anything I need to bring with me?

You will need to bring your IOS device along with you (Ipad, Iphone, Ipad) that can connect to the device via Bluetooth and have access to the email I sent with the app link in it.

Iphone 4 s or above

IPod 5th generation or above

Ipad 3rd generation or above

Ipad mini 1st generation or above

What type of clothing should I wear?

No specific clothing is required.

What do I get for participating?

At the end of the study after I will give each participant a sheet detailing the results that I found. This will include their sitting/standing time statistics and details of when they accessed the app and what they looked at.

APPENDIX 8: OFFICE WORKERS STUDY: INFORMED CONSENT FORM

Exploring office workers' experiences of a wearable self-monitoring tool for reducing sitting time.



Participant ID:

LUMO ID

INFORMED CONSENT FORM

(To be completed after Participant Information Sheet has been read)

**Taking Part
initial box**

Please

The purpose and details of this study have been explained to me. I understand that this study is designed to further scientific knowledge and that all procedures have been approved by the Loughborough University Ethics Approvals (Human The participants) Sub-Committee.

I have read and understood the information sheet and this consent form.

I have had an opportunity to ask questions about my participation.

I understand that I am under no obligation to take part in the study, have the right to withdraw from this study at any stage for any reason, and will not be required to explain my reasons for withdrawing.

I agree to take part in this study. Taking part in the project will include being interviewed twice and recorded (audio). I will also be asked to take a few pictures of my use of the self-monitoring device (screen shot or camera pictures). I understand that I can choose not to take these pictures but can still be part of the rest of the study.

Use of Information

I understand that all the personal information I provide will be treated in strict confidence and will be kept anonymous and confidential to the researchers unless (under the statutory obligations of the agencies which the researchers are working with), it is judged that confidentiality will have to be breached for the safety of the participant or others or for audit by regulatory authorities.

I understand that anonymised quotes may be used in publications, reports, web pages, and other research outputs.

I agree for the data I provide to be securely archived at the end of the project.

I agree to assign the copyright I hold in any materials related to this project to [Amie Weedon].



Name of participant [printed] Signature Date

Researcher [printed] Signature Date

Typical life and day

- **Could you tell me a little bit about yourself and your life outside of work?**

Prompts, if needed

- About yourself as a person
- Family life: home, children, pets
- Where you live
- Life outside of work
- things that are important to you

- **Can you tell me about your health and lifestyle?**

Prompts, if needed

- Health/fitness.PA/exercise/sports?
- How often?
- Tell me about your general health?. How does this impact them? What about impact on health/fitness/exercise/movement
- What motivates your particular lifestyle? (health concerns, lose weight etc)
- What component is important to you most?

- **Could you tell me about your work, what do you do?**

Prompts, if needed

- Do you always work in the same building? From home? Commute?
- Paperless working: less printing more screen time?
- Political issues at work meaning you have to keep head down?
- Deadlines?
- Occasion when you were up more and now you're not?
- Do much walking? Standing? Sitting? Driving?
- What effect do you think working in an office has on your health?
- Has your work like always been like this? – i.e. 5-10 years ago? Have you always done this job?
- **Can you tell me a little bit about why your job is so sedentary? – has it always been like this?**

- **Could you tell me about a typical evening, weekend?, what do you do at home?**

- Do you sit a lot, when?
- What do you enjoy to do?

Typical sitting times during the day

- **If I mention the word sitting, what comes to mind?**

Prompts, if needed

- **Could you tell me about typical times or situations when you sit for a long while during the day?**
- HOW MANY HOURS EACH DAY DO YOU TYPICALLY SPEND SITTING DOWN WHILE DOING THINGS LIKE VISITING FRIENDS, DRIVING, READING, WATCHING TELEVISION OR WORKING AT A DESK OR COMPUTER ON A USUAL A) WEEKDAY; B) WEEKEND DAY?
- What about lying down?
- What about physical activity?
- Tell me about your differences in sitting when you're at home and work?

Experience with prior advice

- **This study is about sitting, but can you tell me about any health related advice you have received before?**

Prompts, if needed

- Family/friends/healthcare/work
- Healthy workplace adviser Neil: physical activity? Step counts?
- Advice on physical activity?
- If yes, how did you find it? What are your thoughts about physical activity?
- If no, what are your thoughts about physical activity?
- Have you ever searched for information yourself? Where? What for?

What influenced your decision to take part in this study?/ can you tell me why you decided to take part? What did you think will be the benefits of taking part?

-

Prompts, if needed

- Role of friends/family/healthcare professionals?
- What do you hope to get from being in the study?
- Why did you decide to take part?

Experience and expectations with technology

- **Can you tell me your experiences of using computers/interview/mobile phones?**

Prompts, if needed

- Could you tell me what you use and how you use it?

- Have you ever used it for health e.g. to track steps or diet or anything? / I notice you have a [fit bit]?
Could you tell me about your experience?
 - How often do you use it? Describe to me how it has helped you? Has it influenced your behaviour in any way? (to do more steps etc)
 - Difficulties experienced? Stress, annoying, novelty?
 - Some people don't use them regularly. What do you think about this? What do you think are the reasons for not using them continuously/everyday?
 - Has using these affected your work life? Made you walk more etc
 - Use it a little: Could you tell me a bit about why you do not use these? How would you feel about using them?
- **You have been asked to wear a belt that vibrates when you sit for a long period of time. How does this sound to you?**
Prompts, if needed
 - Initial comments
 - What do you think about this?
- **The belt also sends information to your phone about how long you have spent sitting every day. How does this sound to you as an idea?**
Prompts, if needed
 - Do you think you may use this? Why do you think this?
 - What do you think about this?
 - Can you tell me about any concerns you may have with wearing the belt?
 - What part of the app do you feel you'd be most interested in?
- How do you think the device will fit in with your normal life? – at work/home?
 - Do you see it fitting in?
 - What do you think will be difficult about it?

General experience

- **What have you been up to since I last saw you?**

Prompts, if needed

- At work
- In evenings/weekends

Experience with technology

- **You were asked to wear a belt measuring sitting time. How did you find it? Tell me about your experience with it?**

Prompts, if needed

- How did you use it?
- How did you find wearing it?
- When did you wear it/take it off?
- What did you do with it at weekends/evenings?
- Why? What made you take it off?
- Why did you decide not to wear it at weekends/evenings?
Tell me about that

What happened when it vibrated?

- What did you do?
- Did you get up?
- Were there times you couldn't get up when it went off? e.g. meetings?
- Did you find any of this useful? Tell me about it.
- Tell me about the app? How did you use it
- What did you look at?

Was there a difference between weekday/weekend wear?

- Tell me about it
- Why?

And work:

Changes in workplace environments:

- 1.) Technological: e.g. paperless? Did this have an impact
- 2.) Organisational: job cuts, redundancies, more work for one person, move to anglestreet

Insecure about job:

- what happened in meetings if it went off?

Surveillance for workplace only

- Wear it at weekends? Evenings? When why?

- **Tell me what you thought of the features of the technology?**

Prompt if needed:

- Where would you have it located?
- - what would make it better?
- Vibration? Only goes of once – what about continuous vibration until you get up etc

Prompt if needed:

- Where would you have it located?
- - what would make it better?
- Vibration? Only goes of once – what about continuous vibration until you get up etc

- **Can you tell me if you spoke to anybody else (e.g. family, friends, colleagues) about the study?**

Prompts, if needed

- How did they feel about it? Did they ask about it?
- What did you tell them?
- Did they help?
- What did they think of the technology?
- What did they think of the information on the app?

Experience with study

- **Can you tell me about any ways in which you did anything different?**

Prompts, if needed

- Can you give me any examples of this
- Could you tell me how you did this?
- Did you change any particular habits?
- Did you sit less often at particular times or on particular occasions?
- How did this make you feel? How did sitting less make you feel?
- Did you experience any problems?
- What about outside of work?

(if they didn't change anything)

- Why might this be?

- **Will you continue what you have learnt during the study?**

Prompts, if needed

- If yes: how will you do this? What will help you with this?
Will you continue to use the technology/educational tools?
How? Why?
- If no, why is this?
-

- **Based on interview 1: In the first interview when I asked you about typical times you sit during the day you said mostly at work. How do you feel about this now?**

Overall study experience

- **You were given the device got to wear the device for two-weeks. Do you see it as something you could wear for a longer period of time?**

Prompts, if needed

- Would you want to wear it for two-weeks?
- Why /not?
- Tell me about how a device like this could help reduce sitting?

- **Tell me what you thought was good about the study**

- **Tell me what you think could be improved?**

Prompts, if needed

- Any suggestions to make it better
- Any suggestions to make it more convenient?
- Any suggestions to make it more likely to help people sit less often?

- **How did you feel about taking part? Would some other time have been better?**

Prompts, if needed

- Tell me about this
- When would a better time be?