Co-design and feasibility testing of a toolkit for mitigating the negative impact of out of hours mobile ICT demands

CO-DESIGN AND FEASIBILITY TESTING OF A TOOLKIT FOR MITIGATING THE NEGATIVE IMPACT OF OUT OF HOURS MOBILE ICT DEMANDS

Charlie Eyre

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Supervised by Dr Joanna Yarker and Dr Rachel Lewis

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Declaration

This thesis is my own work, from designing and conducting the research, through to data analysis and write-up.

Dr Joanna Yarker and Dr Rachel Lewis have acted as supervisors for this research.

Signed: Charlie Eyre

Acknowledgements

I would like to thank all the people who have helped me in completing this research. Most importantly, thank you to my supervisors Jo and Rachel. You have made a daunting journey seem manageable, and your expertise, support, perspective and reassurance throughout the past two years has been so helpful. The lessons that you both and the programme have taught me will continue to serve me well in the years of practice ahead.

Thank you also to all my participants, who took time out of their busy roles to support this research. Thank you to my colleagues on the programme. Even though many of us have never actually met in person, your mutual support and friendship throughout the doctorate has been so important and has added hugely to the experience. I look forward to keeping in touch with you all, and seeing your research out in the world.

To my amazing family - Benedicte, Emilia and Ellida. Thank you for putting up with me disappearing off into the garden 'shed' to work on this over the past couple of years. The stability, support, positivity and fun that you have provided over these years has helped me focussed on what really matters. To my late Mum and Dad – thank you for your unwavering support, for providing a true example of 'lifelong learning'.

And thank you to everyone who has helped in my career to date – Ciaran McGuigan, Gordon Ryan, Pat Lindley and many others too numerous to mention who have helped me develop and grow in a career that I still love, and a profession which I feel lucky to be a part of.

Abstract

This thesis examines strategies for minimising the potential negative impact of out of hours mobile ICT demands. It provides two studies in this area.

The first study is a Systematic Literature Review (SLR). This followed recognised SLR methodology, and sought to identify the interventions and strategies that are effective for managing the negative impact of out of hours work-related mobile ICT demands. The study also reviewed the negative impacts that the interventions and strategies were seeking to reduce, and the factors which influenced their success. The 13 studies identified through the review showed that the evidence base is currently at the initial to promising stage. While a number of strategies and interventions have been identified, the degree to which these have been systematically evaluated is currently limited.

To address the limitations identified in the SLR, the second study used an established approach for intervention development (co-design - Leask et al., 2019) to assemble a prototype toolkit to mitigate the negative impact of out of hours mobile ICT demands. A total of 24 participants were involved in the co-design process, which included focus groups and interviews at two time points. Reflexive thematic analysis identified eight themes key to mitigating the impact of out of hours demands. Using behavioural change principles (Michie et al., 2011), these were formulated into a prototype toolkit, which was critically evaluated by the co-design team and a subsequent review by an independent research consortium. The findings showed that the toolkit was received positively, and was seen by participants as being an important tool in raising self-awareness and enabling goal-oriented behavioural change amongst users.

A number of potential success factor and barriers were identified for future interventions in this area. These, along with the findings of Studies 1 and 2, have been included within an integrated framework model for mitigating the negative impact of out of hours mobile ICT demands.

Table of Contents

List of Tables

List of Figures

Professional Practice Statement

As a Chartered Occupational Psychologist, I am exempt from the first module (Professional Practice Portfolio) of the Professional Doctorate. This thesis is intended to satisfy the requirements for Part 2 of the doctorate (Research Thesis). I provide a summary of my professional practice as context to this thesis.

I completed my MSc In Occupational Psychology at the Institute of Work Psychology, University of Sheffield in 1997. Since this time, I have worked in the profession of occupational psychology. I first worked at the College of Policing for 16 years (1998-2014, gaining BPS Chartership in 2001). I worked across a range of national assessment, selection and leadership development projects for the Police Service of England & Wales. During this time, I developed my own practice in the practical application of occupational psychology within a high risk blue-light profession, and for much of the time I acted as a supervisor or manager of other psychologists' work and practice. For my final seven years at the College, I was Principal Psychologist, with leadership responsibility for a team of around 20 chartered and trainee psychologists, as well as providing occupational psychologist representation on a number of national steering boards (e.g. Policing Advisory Board for England & Wales). I then went on to the Work Psychology Group, a commercial consultancy run by Professor Fiona Patterson and Dr. Maire Kerrin, during which time I was involved in the development of national situational judgement selection tests, and international leadership development consultancy projects. Seven years ago, I set up my own consultancy business, Workspheres Ltd., providing occupational psychology services to a wide range of public and private sector clients. This work spans executive coaching and development for senior leaders, psychometric and assessment centre design, training and facilitation, and bespoke consultancy projects. I was Senior Editor of the BPS Psychometric Test Review process between 2016 and 2022, and continue to act as a Consultant Editor for this process. I have been a BPS RAPPS chartership supervisor for 20 years, successfully supervising a number of trainee psychologists through to chartership completion, including candidates working for government departments, private sector companies, consultancies, Russell Group universities, as well as independent practitioners. I have been a member of the assessment board for the BPS Qualification in Occupational Psychology (2008-2011), and was Acting Chair of the Board for part of this period. I continue to play a role in a range of groups and committees aimed at enhancing professional practice (e.g. BPS Committee for Test Standards member, the UK Assessment Centre Group Committee member, the International Test Commission UK ex-officio representative), and I have co-authored a number of professional guidance documents in the Occupational Psychology

arena (e.g. The BPS Standard for Design and Delivery of Assessment Centres). I have presented at a range of national and international conferences throughout my career (BPS DOP, BPS Supervision, IPMAAC (PRHSA), ASPIH, EAWOP, ITC, UK-ACG Conferences) on a range of occupational psychology related topics. I am also a chartered member of the Chartered Management Institute, and early in my career I worked on secondment to the US Immigration & Naturalization Service I/O psychology team in Washington DC.

During my 23 years of professional experience of applied psychology practice, I have helped in shaping a range of practical, evidence based solutions to solve real world challenges, both in the UK and internationally. I have also conducted and overseen a range of applied research projects in my career (assessment validation studies, focus groups, surveys etc.), a number of which have been presented at international conferences.

In relation to this research, one-to-one coaching with executive level clients over recent years has highlighted that the blurring of work-life boundaries and out of hours expectations has been a recurrent theme and challenge for my clients. They reported problems with stress, lack of sleep and ruminative thinking resulting from out of hours work-related mobile technology use. These clients understood that they needed to make changes to their personal behaviour and working practices in order to reframe boundaries and habits around work-related technology usage. However, I found that many clients had a perception that this was part of a 'treadmill' over which they had little control, and they had little familiarity with strategies which might be available to assist in minimising these challenges. In reflecting on this with my supervisors, it highlighted to me that further research was required in this area. This research would firstly explore the current evidence base around which strategies might be effective for minimising negative impacts. Secondly, the research would develop practical tools to assist people who are struggling with out of hours work-related mobile demands.

Publications Arising From This Thesis

Completed Talks & Presentations:

Affinity Health at Work Research Consortium, hosted by Birkbeck, University of London, December 2022.

Eyre, C., Yarker, J. & Lewis, R. (2023, May 24-27). *Managing the Negative Effects of Mobile Technology Out of hours Work Demands. A Systematic Literature Review and Co-Design of a Prototype Toolkit.* European Association of Work & Organisational Psychology Conference, Katowice, Poland. https://eawop2023.org/
This paper won the conference's award for *Best Oral Presentation – Science & Practitioner*.

Planned Journal Publications:

It is envisaged that both the systematic literature review and the empirical paper within this thesis will be submitted for consideration for publication.

Chapter 1: Background to Research

1. Overview

The growing use of advanced mobile information and communications technology (ICT) devices for work has led to significant changes in the boundaries between work and home. Work-related email, phone calls and instant messaging have become increasingly accessible, as more employees have smartphones, tablets and other portable ICT devices. This has resulted in realignment of individuals' and organisations' expectations in terms of the boundaries of the working day. Over the past decade, much research has focussed upon the impact of out of hours work-related mobile ICT usage (and the 'always on' culture) on individual employees' well-being (e.g. Schlachter et al., 2018). While a significant evidence base has been developed around the potential negative impacts of these out of hours demands, there has been far less focus on strategies to minimise these negative impacts. The purpose of this research is to systematically review the strategies and interventions that are available, and the evidence around their relative effectiveness. The subsequent empirical study involves co-design a prototype toolkit, and testing the feasibility of using this to minimise the negative impacts of out of hours work related demands.

2. Theoretical Foundations

This chapter introduces the key theoretical foundations for the thesis. Firstly, it describes the impact that increased workplace reliance on mobile technology that this has had on work-life balance, through the concepts of the 'always-on culture' and techno-invasion – i.e. the constant connectivity which blurs boundaries between work and personal life (e.g. Chem et al, 2022). It introduces past research that has explored the range of potential negative impacts that such out of hours demands can have on individuals. It also introduces key theories relating to the work-home interface - boundary management (Nippert-Eng, 1996)., segmentation (Kreiner, 2006), and psychological detachment Sonnentag and Bayer (2005) - and their role in influencing the negative impact of techno-invasion. Linked to this, the chapter outlines the evidence base around specific, practical strategies used by individuals and to facilitate boundary management and psychological detachment. In combination, these theories underpin both Studies 1 and 2, as they all provide important context and meaning to the role and impact of work-related out of hours mobile technology demands. The following sections will introduce each of these in more detail.

3. Defining Out of Hours Mobile ICT Demands

For the purposes of this research, out of hours mobile ICT demands are considered to be "**any demands that fall outside a worker's regular or contracted hours**". These demands are primarily facilitated by mobile technology, and may include emails, phone calls, instant messaging and any other channel which diverts the attention of the employee back to work-related activity during non-work time. The demands may or may not be initiated by the worker. For example, they may receive an unexpected phone call from their manager in the evening. Alternatively, they may decide to check emails at a weekend. As shall be seen, even for demands that are initiated by the worker, there may be implicit or explicit pressure felt by the individual to complete this work outside of their working day. For this research, contracted 'on-call' arrangements or contracted irregular shift patterns are not considered as out of hours demands.

Other researchers have used aligned definitions for exploring this area. For example, Schlachter et al. (2018) refer to **work during designated non-work time**, and Eichberger et al. (2020) refer to **technology-assisted supplementary work** (performed during time predominantly reserved for leisure and relaxation). Park et al. (2020) refer to **'after-hours' work**, and Derks et al. (2014) refer to **contact via smartphone 'after office hours'**. Much of the research has therefore worked on the principle of a recognisable, regular working day. It is acknowledged that as working life and contractual arrangements have become more flexible, it has become more difficult to pin down precise parameters for the concept of 'out of hours'.

While Schlachter et al. (2018) specifically focus on **voluntary** work-related mobile ICT use, this distinction has not been drawn here. As will be highlighted, the implicit pressures that many workers feel to remain contactable out of hours means that the concept of volitional work-related mobile ICT usage is blurred. This reflects the personal allocation framework (Grawitch et al., 2010) – i.e. that the feeling of pressure to respond to out of hours messages is non-autonomous. As such, there is complexity in determining whether or not out of hours engagement is voluntary, adding difficulty to making such a clear cut distinction.

In terms of defining mobile technology, this was considered to be **any** mobile technology device which could be used for accessing work-related content (messages, emails, calls etc.) out of hours. This might include smartphone, laptop, tablet etc. In practice, much of the research in this area has related specifically to the use of smartphone technology.

4. The Antecedents of Out of Hours Work-Related Mobile ICT Demands

This section will introduce the factors that contribute to out of hours demands. It will explore the prevalence of mobile technology usage, the concept of 'smartphone addiction', and how work-related mobile ICT usage influences work-life balance.

a. Technology and Smartphone Usage

The ubiquity of smartphones has grown – in the UK, Deloitte (2019) found that individual ownership of a smartphone had increased from 52% in 2012 to 88% in 2019, with 95% of respondents said that they had used their smartphone device within the last day. Research by The Radicati Group (2022) showed 333 billion emails are sent each day globally, with this figure projected to increase by 4% each year over the coming decade. The same researchers (The Radicati Group, 2021) also reported that the average office worker received 121 emails each day. Notably, DeFillipis et al. (2020) studied meta-data from employees in metropolitan areas in North America, Europe and the Middle East. They found that the changes in working practices arising at the early stages of the 2020 COVID pandemic resulted in out of hours email increasing by 8.3%, with the time period between the first and last email of the day increasing by an average period of 48 minutes. This coincides with reported increases in the number of unpaid overtime hours employees are working. Richardson and Klein (2021) found that UK employees were working an average of 7.8 hours of unpaid overtime per week in 2021, and the Sixth European Work Conditions Survey (Eurofound, 2017) found that, pre-pandemic, 22% of employees worked in their free time to meet work demands several times a month. A survey of 2000 UK-based employees (Aviva, 2019) found that 75% of respondents were checking work emails at the weekend.

While evidence suggests that there have been increases in working hours, the prevalence and impact of out of hours technology-enabled demands has not necessarily been an issue proactively discussed within organisations. For example, survey research for 700 workers reported by MacKay (2019) found that 76% of respondents had never spoken to a colleague about email response time expectations, despite the increased prevalence of out of hours email activity. Without this open conversation within organisations, it is likely that the practical impact of out of hours communication is neither fully understood nor proactively managed.

Smartphone technology has also multiplied the channels through which employees are potentially contactable. Instant messaging channels such as WhatsApp, Facebook Messenger and Slack have increasing popularity in the workplace, with survey research conducted with 3,047 UK workers showing 90% used messaging apps to communicate with colleagues (TotalJobs, 2018). Notably, this

research found that 53% of respondents said they would still message colleagues while they were personally on holiday, 43% while off sick, and 39% while out with family and friends.

b. The Rise of Smartphone Addiction

While smartphone usage has in part been driven by organisational expectations, there is also growing evidence around the phenomenon of 'smartphone addiction', both within and outside of the work environment. As the technology has evolved, so too has the evidence base on this concept - a search of the EBSCO database since 2015 (conducted in January 2022) showed 1354 peer-reviewed journal articles relating to 'smartphone addiction'. The concept of employee addiction to technology is not new. Porter and Kakabadse (2006) conducted focus groups and interviews with managers across several countries, and reported patterns of compulsive use of technology by employees, closely associated with 'workaholic' behavioural patterns being exhibited by employees.

Systematic reviews have been conducted on strategies for prevention and intervention for smartphone addition. Liu (2021) found six alternative approaches: psychotherapies, cognitive training, behavioural intervention, application restriction, social intervention and complementary / alternative medicine. The current evidence around the relative effectiveness of these interventions in a workplace is limited. In non-work settings, there is some initial positive evidence. For example, Koo (2011) used an intervention design to explore the effects of cognitive behavioural therapy techniques for tackling smartphone addiction in a student population. They found some positive effects on changing smartphone usage, albeit Lui (2021) does flag some methodological issues around homogeneity of the experimental and control groups in this particular study.

David, Roberts and Christenson (2018) summarised research on smartphone addiction to date, stating that while the majority of studies showed that smartphone use is associated with lower well-being, this was not a consistent finding, and their own research showed a more nuanced relationship, depending in part on the activity or app that is being used. Research has shown that an average smartphone user spends 4.8 hours per day on their mobile (data.ai, 2022), a time commitment which has increased by 30% when compared to two years earlier. While this research covers general rather than work-related usage, it provides an insight into the significant and wide reaching impact that mobile technology has had on our lives.

c. Mobile Technology and Work-life balance - A Double Edged Sword

A growing body of research has been dedicated to furthering our understanding of work-life balance. Work-life balance has been defined in multiple different ways (as flagged by Brough et al, 2020). The OECD define it simply as 'finding a suitable balance between work and life'. (OECD, 2020). Kirchmeyer (2020) provided a definition with more specificity, stating that work life balance is "the achievement of fulfilling experiences in different aspects of life that require various resources like time, energy and commitment." Notably, this definition goes beyond having a simple demarcation work and non-work domains. It specifies that the balance should enable an individual to experience fulfilment in both work and non-work domains, which will require resources (time, energy etc.) that may be depleted by extensive out of hours work demands. Khateeb (2021) provided a summary of the linkages between the concept of work-life balance and underpinning theories which highlight the interface (and potential tension) between work and non-work activities. These include spillover theory (Wilensky, 1960) and the principle that the overlap of work activities into non-work time can be divided into positive or negative spillover. In the context of this research, the recognition that there is a genuine need for a balance to be found between work and non-work commitments is important. The development of the models of work-life balance has occurred alongside the widespread adoption of boundary-crossing technology in the workplace. As working practices have changes in recent years, there has been growing demand and expectation that organisations ensure that employees have a sustainable and healthy balance between their work and non-work commitments. For example, the BITC 2021 'What if Your Job Was Good for You?' report concluded that a top priority for organisations was to co-create 'good jobs' with employees, aligned with organisational policies and practices supporting a sustainable work life balance. There is growing evidence of the benefits that organisations can realise through taking such steps – the 2021 EWCTS report on Working Conditions (Eurofound, 2022) showed a significant positive relationship between reported work-life balance and working life indicators such as self-realisation, intrinsic rewards, and time flexibility (and negative relationships between work-life balance and indicators such as work intensity and unsocial hours). Given the backdrop of increased accessibility of employees out of hours through mobile technology, there is a tension between achieving an effective and sustained work-life balance for employees, while harnessing the flexibility afforded by mobile devices. Jarvenpaa and Lang (2005) referred to the "Empowerment/Enslavement Paradox" when describing the potential consequences of staying available during non-work time. On the one hand, this can provide greater flexibility to an employee over their approach to work, which has been shown to increase well-being. However, the blurring of boundaries can reduce individuals' capability to detach and engage in recovery activities.

Schlachter et al. (2018) explored this paradox specifically in the context of out of hours ICT usage, conducted a narrative synthesis of 56 studies, and developing a conceptual model of how the themes may affect well-being. From this, they concluded that voluntary use of out of hours ICT is not inherently good or bad, but its impact on individual well-being will depend upon five key themes emerged from this work. Firstly, the socio-normative organisational context will influence employee behaviour, in that organisational cultures that value long working hours are likely to result in increased levels of out of hours voluntary ICT use. Secondly, job-related characteristics (e.g. increased work demands and longer working hours) have been linked to increased out of hours ICT usage across a range of studies. Thirdly, person characteristics (such as individual integration/segmentation preference) will have a key bearing on voluntary out of hours ICT use. This will influence the extent to which the individual has a preference for either setting clear boundaries or adopting a more fluid approach to blending work and non-work activities. The habitual nature of ICT use was also flagged, highlighting the need for self-discipline around when and how ICT is used to maintain worklife boundaries, as well as the risks around 'workaholic' or presenteeism behaviours driving increased out of hours ICT usage. On the theme of individual agency and control, Ohly and Latour (2014) found that those with an autonomous motivation for using a smartphone in the evening had higher levels of well-being, affect, recovery and detachment. Those with controlled motivation (i.e. the individual felt that others were deciding on the extent of their out of hours use) had lower levels of well-being and (in some cases) lower levels of detachment. Fourthly, the researchers flagged how the opportunity to flexibly work anywhere and anytime raises the risk that work encroaches into designated non-work time. They cite a range of evidence (e.g. Barley et al., 2011) which has shown that employees perceive work-life boundaries to be increasingly blurred. This has been found in some studies to enable a flexible approach to managing work and home commitments. However, Schlachter et al. (2018) cite numerous quantitative and qualitative studies that have identified negative interferences with non-work life with ICT use, in terms of both recovery and well-being. Fifthly, the researchers cite the 'empowerment enslavement paradox' (see previous section). These factors then are considered together by the authors as part of a conceptual model for of voluntary ICT use.

5. The Practical Impact of Out of Hours Mobile ICT Demands

The following section explores the impact of out of hours demands. The concept of telepressure is discussed, as well as the negative impacts that have been identified through previous research.

a. An Increasing Culture of Connectivity, Techno-Invasion and Telepressure

Techno-invasion has been defined as "constant connectivity of being 'always exposed' that blurs desired boundaries between work and personal life, maintaining that individuals are available to work requests continuously" (Chen et al. 2022). While techno-invasion defines the circumstances that can arise from the use of mobile technology in work contexts, the impact that this can have on individuals themselves has been defined as workplace telepressure (i.e. the compulsive pressure or urge to respond to work-related messages - Barber & Santuzzi, 2015). Grawitch et al. (2018) and Barber, Conlin and Santuzzi (2019) have found that employees experiencing telepressure have lower levels of satisfaction with work-life balance, as they find it more difficult to psychologically disengage from work. Research has focussed on the impact of out of hours work-related mobile ICT usage on psychological detachment (e.g. Van Laetham, van Vianen & Derks, 2018; Cambier, Derks & Vlerick , 2019), and psychological recovery (e.g. Derks et al., 2014). The research has shown both benefits and costs of this increased flexibility of working.

The impact of techno-invasion, and resultant telepressure, has been gaining increased coverage in mainstream media in recent years, particularly given that widespread working from home during the COVID pandemic has led to increased blurring of the boundaries between work and non-work time (Timmins, 2021).

"One boss would call me at 5 a.m. and I would be expected to answer. I worked during my annual leave, and there were always emails coming in."

Employee in Tech & Finance Firms, (cited in BBC, 2021)

As Schlachter et al. (2018) observe, the organisational and social norms that have resulted from widespread workplace mobile ICT adoption are important. Derks et al. (2015) used a diary study to find that the relationship between daily smartphone use and work-home interference was moderated by the social norms set by supervisors around out of hours availability expectations. In effect, if the employee perceives that their supervisor has high expectations around out of hours availability, then there is a far stronger relationship between smartphone use and work-home interference. The research showed a non-significant effect of colleagues' expectations on the relationship. However, the researchers highlight that social learning theory (Bandura, 1977) suggests employees will adopt the behaviours of others within their social group – in this case, colleagues' patterns of out of hours technology use. Derks et al. (2015) also found that workers who are *engaged* during the working day can prevent evening smartphone use interfering too much with their private lives.

Sonnentag (2018) referred to the "recovery paradox", in which an individual is exposed to high levels of job stressors and has a high need for recovery. However, the recovery process can become impaired due to the job stressors being high and spilling into out of hours activity. Sonnentag (2018) argues that the prevalence of work-related mobile connectivity means that this paradox is now occurring more widely amongst employees, due to the lack of opportunity for workers to effectively engage in the recovery process.

The impact of technology on our working practices extends beyond the devices that we personally own or use. For example, Jain et al. (2018) used survey and interview data to show that widespread availability of WiFi on trains in the UK had increased the degree to which people use their commuting time to respond to emails etc. While this can be considered a time during which employees can "catch-up" and avoid disruption at home, it can also have the effect of extending the working day, resulting in employees' commuting time being considered as an extended window during which they are contactable.

b. The Potential Negative Impacts of Out of Hours Mobile ICT Demands

From the research conducted to date, the following potential negative impacts have been found to result from out of hours mobile technology demands:

- **Work to Home Conflict.** Gadeyne et al. (2018) found that out of hours mobile technology demands led to a lack of availability to participate in home roles and activities, and a potential spillover of stress from the work to the home environment. This made it harder for individuals to mentally detach and disengage.
- **Negative Effect on Family Relationships**. Adisa et al. (2017) found that out of hours mobile technology demands risked "hijacking" an employee's attention during non-work and family time, leading to increased tension and potential conflict with family and friends around diverted focus and lack of availability.
- **Negative Impact on General Health and Well-being.** Adisa et al. (2017) also found that extended working hours resulting from out of hours mobile technology demands can lead to excessive fatigue, and reliance on painkillers / energy drinks in order to stay alert out of hours.
- **Negative Effect on Psychological Detachment** (i.e. the ability to mentally disconnect from work during non-work time). Derks et al. (2014) found that smartphone users were less likely to engage in out of hours detachment and recovery activities. Cambier et al. (2019) and Santuzzi

and Barber (2018) found that out of hours telepressure had a negative effect on employees' ability to detach psychologically. In terms of the practical impact of this, Sonnentag et al. (2010) found that psychological detachment was an important factor in protecting employees' well-being and work engagement.

- **Negative Rumination & Affect.** Park et al. (2020) found that higher levels of out of hours mobile technology demands led to greater levels of rumination and negative affect / mood amongst employees.

- **Exhaustion (Physical & Cognitive).** Barber and Santuzzi (2015) and Santuzzi and Barber (2018) found that higher levels of telepressure led to higher levels of physical and cognitive exhaustion / burnout.

- **Absenteeism.** Barber and Santuzzi (2015) found that higher levels of telepressure predicted higher levels of absenteeism (i.e. days missed from work as a result of physical or psychological health issues).

- **Insomnia & Poor Sleep Quality.** Park et al. (2020) found that out of hours mobile technology demands led to an increased levels of insomnia amongst employees. Barber and Jenkins (2014) found that the use of clear boundaries around work-related use of ICT had a positive impact on sleep, and Barber and Santuzzi (2015) found telepressure predicted reduced sleep quality. Braukmann et al. (2017) found that evening work-related mobile ICT use was detrimental to sleep quality and recovery – even when it was perceived by the user to be positive.

What can be seen is that a considerable focus has been given to the potential negative impact of out of hours mobile technology demands. As highlighted earlier, not all evidence points to negative outcomes, and the increased flexibility afforded by mobile technology can be beneficial and valuable for employees in certain situations. Indeed, Schlachter et al. (2018) highlight through their narrative synthesis the need for greater conceptual clarity around the concept of out of hours demands, as well as further research into the moderating influences around out of hours technology usage. However, the overarching conclusions are that sustained out of hours mobile demands can bring about a range of potential negative consequences, for the individual, their family and the employer.

6. The Psychological Processes & Mechanisms Associated with Out of Hours Work-Related Mobile Technology Demands.

There are a range of psychological mechanisms and processes which have an influence on the both the scale and resultant impact of out of hours mobile usage – these are explored further in this section.

a. *Boundary Management & Segmentation Preferences*

Boundary management refers to the strategies and tactics used by individuals to establish, maintain and adapt the boundaries between work and home / family (Nippert-Eng, 1996). Kreiner (2006) defined *segmentation* as the degree to which aspects of work and home domains are kept separate from one another – cognitively, physically and mentally. In contrast, *integration* represents the blending of various aspects of work and home. While Kreiner (2006) conceptualised this preference as two opposite poles on a segmentation-integration continuum, there has been increasing recognition in recent research that defining an individual's approach to boundary management in this way is too simplistic. For example, an individual may apply both segmentation and integration approaches in different contexts (e.g. Kreiner et al., 2009). As will be seen in Study 1, Duxbury et al. (2014) and Choroszewicz and Kay (2020) both referred to the concept of 'struggling integrators' and 'struggling segmentors' – i.e. those who experienced tension between their aspirational boundary management strategies and those which they found themselves using in practice.

As might be expected, a range of studies have found that those with a preference for integration will have greater out of hours voluntary ICT usage (e.g. Crowe & Middleton, 2012). A number of researchers (e.g., Gadeyne et al., 2018; Adisa et al., 2017) have highlighted that for individuals with an integration preference, the technology can be a facilitator, allowing employees to manage work flexibility and deal with emerging issues in a timely manner. However, as highlighted in the previous section, much of the research to date indicates that out of hours work-related mobile ICT usage can have a detrimental impact on employees' well-being, with the potential to negatively affect psychological detachment and recovery.

McCloskey (2016) emphasised the distinction between flexible and permeable boundaries; flexible boundaries allowing the opportunity to shift work to alternative times and locations, and permeable boundaries allowing the integration of one role while being present in another (e.g. answering a work call during family time). The researchers found that permeable boundaries were more likely than flexible boundaries to lead to work-life conflict.

b. Psychological Detachment

Sonnentag and Bayer (2005) describe ***psychological detachment*** as "the off-job experience of 'switching off' mentally". Park et al. (2011) conducted a survey of university alumni, and found that an individual's segmentation preference was positively associated with their level of psychological detachment. Various meta-analyses have shown a positive relationship between psychological detachment and other well-being measures (e.g. Bennett et al., 2018; Steed et al., 2021; Wendsche & Lohmann-Haislah, 2017), albeit with a range of studies showing moderators to this relationship (Sonnentag et al., 2010). Sonnentag (2018) noted that "the (negative) associations (of psychological detachment) with indicators of poor well-being are stronger than the (positive) associations with indicators of positive well-being, suggesting that detachment alone is not sufficient for promoting positive states." This suggests that psychological detachment, in itself, may be insufficient to offset negative effects of out of hours ICT demands.

c. Models of Psychological Recovery

Psychological recovery was conceptualised by Sonnentag and Fritz (2007) as including four key experiences:

- Psychological detachment– i.e. mentally switching off from the demands of work
- Relaxation – a state of low activation and positive affect (Stone et al., 1995)
- Mastery – experiences that provide challenge and learning to the individual without overexertion.
- Control – the individual's ability to make choices about how they use their non-work time.

Sonnentag and Fritz (2007) present a range of evidence showing the negative relationship between job stressors and the four key recovery experiences. A number of studies have also shown that out of hours mobile demands can adversely affect psychological recovery.

More recently, Newman et al. (2014) proposed the DRAMMA model, which integrated existing need and recovery models (e.g. Sonnentag & Fritz, 2007) to explain the role that leisure plays in optimal individual functioning. The model presented six core psychological mechanisms that leisure activities trigger to promote subjective wellbeing – detachment, relaxation, autonomy, mastery, meaning and affiliation. The model has been longitudinally validated by Kujanpää et al. (2021), whose research showed that of the six psychological mechanisms, relaxation and detachment showed the strongest predictors of weekly optimal functioning for six of the seven relationships investigated.

7. Strategies & Interventions for Managing the Negative Impact of Out of Hours Demands

The extensive research over the past decade exploring the impact of out of hours work-related mobile ICT usage has resulted in a broad range of recommended strategies, yet there has been less published research on the structured implementation and evaluation of interventions for managing these negative effects.

a. Recommended Strategies & Interventions

Drawing on their findings of cross-sectional and longitudinal relationships between out of hours demands, mechanisms and outcomes, authors have made recommendations around steps that organisations and employees could take. These are outlined below in Table 1:

- Increasing shared awareness of the risks associated with extensive out of hours work-related mobile ICT usage (Cambier et al., 2019; Van Laetham et al.,2018).
- Proposing practical steps to minimise the risk of out of hours disturbance (e.g. changing inbox alert settings (Cambier et al., 2019)).
- Recommending that out of hours communication should emphasise positive feedback and goal progress rather than negative messaging (Butts, Becker & Boswell, 2015).
- Supervisors / organisations setting clear guidelines / policy about out of hours availability expectations (Van Laethem et al.,2018; Derks et al., 2015; Adisa et al.,2017; Choroszewicz & Kay, 2020; Barber and Santuzzi, 2014; Cambier et al. 2019).
- Negotiating tailored agreements between organisations and individuals, based around individuals' personal circumstances and boundary management preferences (Barber & Santuzzi, 2015; Ohly & Latour, 2014; Kossek & Lautsch, 2012).
- Monitoring and adapting job design to avoid excessive out of hours demands (Gadeyne et al., 2018; Barber, Conlin & Santuzzi, 2019).
- Offering employees training in recovery activities / detachment strategies (Ohly & Latour, 2014; Cambier, 2019)
- Offering employers training in family supportive supervision behaviours (Barber et al., 2019)
- Practical proposals for reducing organisations' reliance on email as a primary means of communication (Newport, 2021).

Table 1 – Recommended strategies and interventions for managing negative impact of out hours mobile ICT demands

The proposed interventions can be applied at a number of levels – from individual (e.g. the proactive use of personal boundary management strategies), through to societal (e.g. the 'right to disconnect' legislation introduced in France in 2017). As can be seen, from the six psychological mechanisms within the DRAMMA model (Newman et al., 2014), the majority of the proposed interventions focus upon facilitating detachment and relaxation, and ensuring that these mechanisms are supported through minimising the frequency and impact of out of hours mobile ICT disturbances. The focus of interventions varies across studies, and a number of authors cited have emphasised that a 'one-size-fits-all' approach is unlikely to be as effective as a more targeted intervention. Ideally, each intervention should take into account individuals' segmentation preferences, role requirements, and boundary management strategies.

While many of these studies have made recommendations around interventions and strategies, relatively few studies have conducted systematic evaluation of the efficacy of the proposals. In addition, there has only been limited focus to date on how structured consultation with employees and team leaders can be used to ensure that specific, practical and targeted resources are available to support these strategies. This is particularly important given a) the very real tensions that managers and employees will experience in balancing deadlines and workload pressures with the need for detachment and b) the different strategies that will be required to match each individual's own boundary management preferences and role requirements.

At an organisational level, a basic internet search shows that many organisations have published guidelines on email usage and etiquette. These often include high level statements designed to limit expectations of availability outside working hours. However, there is little systematic evaluation of the extent to which such guidelines are effective in modifying employees' behaviour over a sustained period. Attempts have been made to implement policy to manage out of hours commitments – these range from shared behavioural agreements at a group level, through to national legislation around 'right to disconnect'. Russell (2017) conducted a systematic literature review summarising strategies for effectively managing email at work, including the impact of out of hours working. This review found that guidance and policy around email is most needed in contexts where usage is ambiguous (e.g. out of hours response expectations). However, Russell cautioned against blanket policies banning out of hours e-mail (as previously seen in organisations such as Volkswagen – e.g. Potter, 2011). This is notable, given that other survey data (Aviva, 2019) has shown that 50% of employees would support a ban on out of hours email activity. However, such strategies arguably focus on the wrong target, through simply creating a relatively crude technological barrier. The risk remains that the underlying behavioural patterns of many employees will simply be transferred to another communication platform (e.g. personal mobile devices). While Russell (2017) recommends

further systematic evaluation of interventions that involve restricting access to email, additional research was not found through this review, consistent with the findings of McDowall and Kinman (2017). What is clear is that individual differences in boundary management preferences are likely to play a big role in how individuals and teams view out of hours mobile technology demands, and therefore universal corporate or national policies with a 'one size fits all' approach are likely to be relatively blunt tools in terms of providing a solution that works for all employees.

Pansu (2018) provided an exploratory qualitative evaluation of the effectiveness of the 'right to disconnect' legislation in France. He found that even though the majority of workers welcomed the introduction of the legislation, relatively few organisations had actually implemented the necessary organisational policies two years after its introduction. Organisations cited concerns around short-term profitability and performance, and these imperatives appeared to outweigh the longer-term goal of minimising out of hours demands. Nonetheless, the prevalence of such macro-level interventions has increased in recent years, with 'right to disconnect' code of practice or legislation released in Ireland (Workplace Relation Commission, 2021) Belgium (BBC, 2022), and Scotland (Stone, 2022).

b. Intervention Studies around Detachment & Out of hours Recovery

While the number of intervention studies in this field is still relatively limited, there have been intervention studies which have focussed on detachment and out of hours recovery. Karabinski et al. (2021) conducted a meta-analysis of 30 studies with 34 interventions designed to facilitate detachment. These interventions fell into three main groups; those aimed at **reducing stressors** (job design and problem focussed coping), those addressing **primary appraisal** (strategies that divert attention away from stressors and/or facilitate employees' re-evaluation of stressors – including boundary management, emotion regulation, engagement in recovery activities, and mindfulness), and those addressing **secondary appraisal** (the evaluation of coping resources – e.g. improving sleep, increasing resources through job design, and work retrospection). These interventions generally showed a significant positive effect on detachment from work (d=0.36 on average).

Hahn, Binnewies, Sonnentag and Mojza (2011) used a quasi-experimental approach to evaluate the efficacy of a two session educational intervention focussing on effective recovery from work and boundary management strategies. This research showed that the training group experienced an increase in recovery experiences, recovery-related self-efficacy and sleep quality, as well as reduced state negative affect and perceived stress.

Other broader intervention studies around well-being have included the use of mindfulness as a segmentation strategy for improving work-life balance (Michel et al., 2014). This research showed that employees who completed a three week online training intervention experienced significantly less strain-based work-family conflict, and significantly more psychological detachment and satisfaction with work life balance. Althammer et al. (2021) followed this research with a further intervention using mindfulness training as a cognitive emotional segmentation strategy. A three week online self-training programme was shown to have positive effects upon psychological detachment and work-life balance satisfaction, while reducing work-family conflict. Notably, those reporting to have low segmentation preferences (i.e. those who tend to employ fewer tactics to segment work from home) reported stronger effects from the intervention.

Therefore, there is a promising evidence base for strategies and interventions around broader boundary management and segmentation. However, as Tetrick and Winslow (2015) observed, the 'gold standard' of the randomised control trial is still relatively rare in this field. When looking at more specific interventions addressing the effects of technology on recovery and detachment, Richardson (2017) observed that structured intervention studies were even rarer. Schlachter et al. (2018) noted the need for further research into how employees experience and react to voluntary out of hours ICT use, referring to this as a 'black box'. It is notable that the majority of the 56 studies that Schlachter et al. (2018) reviewed were cross-sectional in nature. While they discuss a number of the organisational interventions described above (e.g. the Daimler AG and Volkswagen AG initiative to prevent out of hours email activity), they highlight that new primary studies are needed to assess whether these types of interventions are effective.

c. Related Intervention Studies around Changes to ICT-related behaviour

Russell et al. (2021) used an intervention design to assess the impact of the Work-habit Intervention Model (WhIM) on changing work-related email habits. This showed that work email habits can be changed through the use of a two stage process. Firstly, employees engage with rationalised plans (i.e. developing a clear understanding of why changing the particular habit is important) and then make a clear commitment to using these plans. Secondly, to assess whether the intervention is effective, the work habit change should be associated with a clear outcome – i.e. a resultant improvement in relevant goal attainment and well-being. Russell et al. (2021) found that the WhIM intervention was effective for changing email habits for those participants with higher levels of self-efficacy. While the research was focussed on broader work-related email habits rather than specifically out of hours behaviour, this nonetheless provided an important understanding of the

interventions which might be necessary to shift habitual behaviours in employees around checking mobile-based communications out of hours.

8. Summary

It is notable that the majority of the research in this field has been completed over the past decade. There is a rapidly growing evidence base, while the mobile technology used in work contexts has also evolved quickly. Considerable research has been conducted on the impact of out of hours ICT demands, and there is a growing body of research around broader strategies for detachment, boundary management and segmentation.

It has been noted that there is currently a lack of clarity around the primary evidence relating to strategies and interventions for tackling the negative impact of out of hours ICT demands (e.g. Schlachter et al., 2018). While a broad range of recommendations have been made in past research about potential mitigating strategies (as outlined in Section 7a), there has been far less empirical evaluation of the prevalence and effectiveness of these strategies. To date, no systematic review has sought to bring together what is known. The purpose of Study 1 is to conduct a systematic literature review on this topic, specifically to explore which interventions and strategies are effective for managing the negative impact of out of hours work-related mobile ICT demands.

The subsequent empirical research (Study 2) responds to the call for further interventions to mitigate the negative impact of out of hours mobile ICT demands. It draws on the theories of intervention design, and the learning from the SLR, to both develop a prototype toolkit using co-design. The feasibility of employees and managers using the toolkit to mitigate the negative impact of out of hours ICT demands will also be tested. This understanding is important to ensure that future initiatives are targeted, evidence-based, and maximise the opportunity to deliver positive outcomes for employees and organisations.

Chapter 2: Methodology

1. Overview

This chapter will lay out the rationale and justification for the methodological approach adopted for the thesis. It will firstly discuss my philosophical stance, and then explain the rationale for the methodology chosen for both the systematic literature review (Study 1), and the empirical research (Study 2). For Study 1, the benefits and drawbacks of the Systematic Literature Review methodology are examined. For Study 2, the choice of a qualitative, co-design approach are discussed, alongside the alternative approaches that might have been adopted.

Saunders et al. (2015) proposed the research 'onion' model, to help frame how the research is positioned, and specific aspects of the study design. There are six layers to be considered and clarified; philosophy, approach, strategy, research design, time horizons, and data collection and analysis. These are each reviewed in this chapter.

2. Research Philosophy

Reflexivity has been described as "taking a critical look inwards"; reflecting on one's own lived reality and experiences, and how these affect the research process (Hess-Biber, 2012). Such practice is key to examining and making explicit one's own assumptions, decisions and interpretation when conducting research. The starting point of my research philosophy has been influenced by my role over the past 25 years as a practitioner psychologist and consultant. This has shaped my approach to prioritising practical solutions that will have clear purpose and utility in real world organisational settings.

A research paradigm (Kuhn, 1970) describes a basic framework of shared assumptions, principles and methods, and can function as a set of conceptual and practical tools in social research (Abbott, 2004). In reflecting on my research paradigm, it was first important to consider my ontological and epistemological standpoint. Ontology refers to the assumptions the researcher makes around the nature of reality, and how the world operates. An objectivist position would argue that the phenomena being researched exist independent of the knowledge of it. In the context of this research, it did not appear to be realistic to consider the negative impact of out of hours mobile demands as an objective, clear and consistent phenomenon that is simply there to be observed. Rather, the perceptions of both the researcher and the research participants will, to some degree,

shape the way in which these phenomena are conceptualised and explained. This links to the constructivist philosophy – i.e. that individuals' personal experience within their own context is likely to be more relevant than a purely positivist perspective of a 'factual', objective reality. Nonetheless, this standpoint should not discount the idea that there is some degree of imperfect reality that is there to be explored, while recognising that both the researcher and participants will influence how this is interpreted.

Epistemology refers to the theory of knowledge, and considers what constitutes acceptable knowledge in a given field. In this research context, the initial philosophical question was whether or not there are objective, identifiable 'facts' relating to the negative impact of out of hours mobile demands. Research on out of hours mobile ICT demands, as introduced in Chapter 1, suggests that each individual will have a unique perspective on the potential impact of out of hours mobile demands, and the combination of practical strategies which might assist them in tackling any resultant negative impact. Each individual's perspective will be influenced by a complex array of factors such as personal boundary management preferences (e.g. Crowe & Middleton, 2012), perceived locus of control (Ohly & Latour, 2014), personal ability to psychologically detach (Sonnentag & Fritz, 2007), and the team and organisational culture (e.g. Grawitch et al., 2018). Furthermore, one individual's perspective on out of hours mobile demands is unlikely to be a static, rigid set of perceptions, instead varying across time as multiple factors evolve (e.g. family commitments, workload, manager expectations, team and organisational culture etc.). The subtle and complex dynamic between this range of factors suggested firstly that there are a range of real-world phenomena which are relevant to the topic and important to study, and which can be considered to exist (in an imperfect manner) regardless of the perspective of the researcher or participant. Nonetheless, the nature of these concepts cannot be simply disaggregated from those who are perceiving them – whether researcher or participant. As such, this research still sought to identify clear, defined strategies / interventions that could be of help to employees and organisations (Study 1), while recognising that it the interpretation, perception and application of these may vary from person to person. This links to the premise of Study 2 – i.e. a toolkit for employees and organisations (which offers a range of different resources) will help to account for the different experiences and requirements that each individual will have.

Given my ontological and epistemological position, I have initially approached the research from the general paradigm of **pragmatism,** while recognising the importance of adopting a **critical realist** perspective. Elder-Vass (2022) highlighted that there can be significant overlaps between the two philosophies, while also recognising their differences.

The pragmatist paradigm is based on the principle that researcher will adopt the philosophical or methodological approach that works best for the particular problem being investigated (Tashakkori & Teddlie, 1998). The flexibility that pragmatism offers has a natural appeal in tackling real-world research problems, and the linkage between its methodological principles and the approach adopted in this research is summarised in Table 2. However, Fryer (2022) argues that the flexibility of pragmatism is a limitation in itself, and it is vital for researcher to have a clear understanding of their own ontological and epistemological position to truly understand how they are viewing the world, and the potential impact of this perspective on their research outcomes. As such, while I felt that my philosophy fell within the broad definition of pragmatism, this required some further clarification around how my own ontological and epistemological position fitted within this.

Kelly and Cordeiro (2020) identified three methodological principles associated with a pragmatic approach to enquiry:

Methodological Principle of Pragmatism	**Implications for this Research**
1) Emphasis on actionable knowledge.	This links to the aim of co-designing a toolkit in Study 2, which will have actionable, practical impact for individuals and organisations.
2) Recognition of the interconnectedness between experience, knowing and acting.	The practical experiences and perceptions of all participants will have a bearing on their role in the co-design process in Study 2. Also, the concept of the toolkit rests on the principle that end users will draw on their own experience to make personal prioritisation decisions about which strategies and resources will be most relevant for them.
3) Inquiry as an experiential process.	Linked to Deweyan principle of enquiry (Dewey, 1938) – i.e. that there is no distinct boundary between everyday life and research. The co-design approach employed in Study 2 uses the direct experiences of participants to form a practical solution to the problems identified.

Table 2 – Pragmatism Research Paradigm in the context of the thesis.

The critical realism perspective has roots in the work of Bhaskar (1975), and takes the view that "there is reality to be known, albeit imperfectly, and that our ideas about reality are improved by testing those ideas against observations and data" (Brunson et al., 2023). This aligns with the ontological and epistemological positions outlined above – i.e. a recognition that there is a form of

'reality' to be known about the topic area, and that this can be improved through undertaking the research within Studies 1 & 2. Nonetheless, this is underpinned by a recognition that this 'reality' is imperfect, and that individuals' perspective of reality (i.e. the constructivist philosophy) will also have an important role to play.

Brunson et al. (2023) set out seven key insights relating to critical realism, which are set out in Table 3 below. These are referenced to their implications for the current area of study:

Critical Realism Insight	Relevance to current research
A complex reality exists independently of our ideas about it, and this reality is knowable, although imperfectly.	Acceptance that there is objective knowledge to be gained around strategies for minimising negative impact of out of hours mobile demands, albeit this knowledge is imperfect.
Reality is composed of a complex and stratified hierarchy of open systems.	Acceptance that there are 'layers' of reality. In this context, these might include organisational culture, technological settings, individual boundary management preferences etc.
Causality is best understood in terms of causal processes that may or may not be directly observable or generalisable; these processes involve complex interactions among generative mechanisms and contextual conditions	Acceptance that potential causal processes (e.g. a particular strategy alleviating negative impact of out of hours mobile demands) may not be observable or indeed generalisable, and will involve complex interactions between different environmental factors.
Theory and theorising about causal processes are central to both scientific explanation and practical action.	Acceptance that while theory about mitigating strategies may not present a true, objective 'reality', there are still real world benefits to be gained from exploring and theorising about these causal processes.
Theory exists at multiple levels of abstraction, ranging from models to metatheory.	The concept of multiple levels of abstraction in this research is reflected in strategies ranging from concrete, practical actions (e.g. turning off notifications), through to macro, complex theoretical levels (e.g. evolving societal expectations around out of hours availability).
A diversity of methods can provide evidence in the search for causal processes.	This research has utilised both systematic literature review and co-design methodology (using a diverse sample) to explore the potential causal processes

	between proposes strategies and mitigation of potential negative impact.
As social scientists, we have an obligation to use social science knowledge to promote human flourishing.	Ultimately, the intent of the research is to gain insights into how to improve individuals' working relationship with mobile-based out of hours demands. This in turn is intended to promote human flourishing

Table 3 – Seven Insights from Critical Realism (and their Relevance to this Research) – Brunson et al. (2023).

The subject matter has shown a tension between two forces – the first being the reality of working within organisations that can have standard policies, guidelines, mobile equipment with non-adjustable settings etc. (e.g. Cousins & Robey, 2015). The prevailing culture within an organisation may also set either explicit or implicit expectations of how an individual should perform within the organisation. However, it is also apparent that individuals will bring different and unique personal circumstances and expectations to their role. The point at which these individual preferences or requirements combine with the specific cultural code within an organisation (or sub-culture within a team) will lead to a unique, personal reality for that employee or leader. On this basis, a qualitative approach to Study 2 aligns with the critical realist philosophy, recognising interpretivist / constructivist perspective, while still seeking to identify tangible outcomes that can be considered generalisable within real world applications.

The research approach in this instance is primarily inductive (i.e. the theory is following the data) rather than deductive (i.e. setting out and testing a clear hypothesis). The inductive approach naturally aligns with the nature of the research - i.e. the 'bottom-up' development of a toolkit based on participants' contributions, using a recognised and structured co-design process. The caveat to this is that the outcomes of the systematic literature review also played a role in the co-design process, in line with the recommendations of Leask et al. (2019). This meant that certain parts of the co-design process involved seeking targeted feedback on the perceived efficacy of previously identified strategies (e.g. turning of mobile phone notifications). As such, certain aspects of the co-design discussions did represent informal hypothesis testing.

Schwarz and Stenaker (2016) define phenomenon-driven research as "problem-oriented research that focuses on capturing, documenting, and conceptualizing an observed phenomenon of interest in order to facilitate knowledge creation and advancement". Huniche and Sørensen (2019) highlighted that method-driven and subject-driven research had often historically been considered as opposite poles, whereas phenomenon-driven research considers the methods and subject matter to be mutually interacting. For the empirical study, this has been a key consideration; i.e. how the subject

matter (out of hours mobile technology demands) and the intervention design methodology (co-design of a toolkit) will interact. As shall be seen below, the key purpose of closely involving participants throughout the design stage of Study 2 was to ensure that the participants' personal experience of dealing with out of hours demands was closely reflected in the outputs of the research. The concept of developing a toolkit attempts to join these two perspectives – i.e. developing a standard set of resources, which can then be personalised to suit the individual's unique circumstances and reality. It was important that the research captured the personal reality experienced by employees, managers and HR practitioners in relation to their use of out of hours mobile technology.

3. Ethical Stance

As a BPS Chartered Psychologist and HCPC Registered Psychologist, I was bound by the BPS Code of Ethics and Conduct (BPS, 2021), the BPS Practice Guidelines (BPS, 2017), and the HCPC Standards of Conduct, Performance and Ethics (HCPC, 2016). The four key principles of the BPS Code are respect, competence, responsibility and integrity. In the context of this research, the first principle of respect meant ensuring that informed consent was gained from participants, that participants' contributions were treated confidentially, and that participants' contributions to the focus groups were treated with openness and compassion, both by myself as the researcher and by other participants. The second principle of competence meant ensuring that I had sufficient competence to lead the research in a professional and ethical manner. There were regular points during the research at which I consulted with supervisors, librarians and chartered psychologist colleagues to ensure the approach I was adopting was both fit-for-purpose and representative of current thinking and practice. For example, while I have regularly facilitated focus groups during my career, I consulted the evidence base and practice guides to check that I was following up-to-date research and guidance, particularly in terms of facilitating online focus groups (e.g. Daniels et al., 2019). In regard to the third principle of responsibility, I was very much aware that as lead researcher it was my responsibility to ensure that all participants were clear on expectations, through providing detailed information within the consent form. It was also my responsibility to ensure that I was personally meeting the agreed commitments, ringfencing dates for focus groups in the face of other work pressures etc. Finally, the principle of integrity was met through ensuring that professional boundaries were maintained, that I approached the data with an unbiased perspective, and that the outcomes of the research were motivated solely by the research question (rather than other factors such as commercial benefit etc.). This was achieved through following clear procedures in the

analysis of the data (both in Studies 1 and 2) and also through completing a reflexivity journal throughout the research. In advance of the study, the research proposal for the full study underwent ethical review by the Birkbeck, University of London Ethics Committee.

4. Study 1 - Systematic Literature Review

4.1. Research Strategy - the rationale for using a Systematic Literature Review

The systematic literature review (SLR) has been defined by Denyer and Tranfield (2009) as "a specific methodology that locates existing studies, selects and evaluates contributions, analyses and synthesises data, and reports the evidence in such a way that allows reasonably clear conclusions to be reached around what is and what is not known." The methodology has been widely used since the 1970s. At the time, Cochrane (1972) highlighted the importance in medical practice of having comprehensive, systematic and unbiased summaries of existing evidence when making treatment decisions.

The SLR methodology was chosen in this instance as it enabled the examination of a defined research question using clear and replicable principles. Rather than using an informal, literature review, that is likely to have shifting parameters and search criteria (Tranfield et al., 2003), the use of the SLR meant that a clear search methodology was established at the outset, to ensure clarity, transparency and rigour. This also helped ensure replicability and scrutiny of the study. The SLR methodology can also facilitate the synthesising of research findings to show evidence on a meta level, which is particularly useful in identifying gaps in current research (Snyder, 2019). It can help avoid any subjectivity or biases influencing the outcomes of the review, as well as providing confidence that the outputs would represent a comprehensive summary of the current evidence base (Snape et al., 2019). Conducting a structured quality assessment of papers enables broader conclusions to be drawn about the relative quality of the current research base, and the level of confidence which could be placed in findings to date (Snape et al., 2019). The SLR approach allows for the consideration of both quantitative and qualitative evidence (Centre for Reviews & Dissemination, 2008), and allows for an objective evaluation to be made in instances where different research papers were providing conflicting evidence.

4.2. Study Selection Criteria Use of SPIO Framework

In clarifying the inclusion / exclusion criteria for the review, the SPIO Framework was employed. (Robertson et al., 2015). This set out the criteria for study design, participants, interventions and outcomes. At the outset of the research, the search terms were adjusted through consultation with both supervisors and library staff before being finalised. The upfront specification of these criteria is a key component of the SLR process (CRD, 2008). The SPIO framework was originally adapted from the PICOs framework (Population, Interventions, Comparison and Outcomes) used by Richardson et al. (1995). Many other study selection frameworks are available, including SPIDER (Cooke et al., 2012) etc. PICOs is a widely used set of selection criteria across systematic review practice, endorsed by the Cochrane Collaboration (Higgins et al., 2022). The SPIO framework represents a minor adaptation, and was chosen for this study. It included the evaluation of *study design*, which was important given that the review intended to be inclusive of quantitative, qualitative and mixed methods studies. In contrast to PICOs, the SPIO criteria does not include the *comparison* criterion, which was largely redundant given that relatively few of the studies identified used a formal intervention methodology with control groups. The SPIO framework had previously been applied successfully in a systematic review of interventions in a workplace well-being context (e.g. Donaldson-Feilder et al., 2019). Given the parallels in terms of the subject matter being considered, this again provided reassurance that this model would be fit for purpose in evaluating research in this area.

4.3. Use of PRISMA diagram

The PRISMA diagram was used, as recommended within the 2020 PRISMA statement (e.g. Page et al., 2021). This again provides transparency around the sequential stages which have been completed within the systematic literature review, and the number of papers which were selected or rejected against the search criteria at each stage of the SLR. The PRISMA methodology has been used extensively since its introduction (e.g. Page & Moher, 2017), with over 19000 citations found at the time of their review.

4.4. Evidence Synthesis

As Briner and Denyer (2012) argue, one of the key benefits of the systematic literature review methodology is that is promotes the synthesis of evidence from across different studies, in order to progress understanding of the existing evidence base. The purpose of synthesis is to achieve “a

greater level of understanding, and attain a level of conceptual and theoretical development beyond that achieved in any individual study" (Campbell et al., 2003, cited Briner & Denyer, 2012). Briner and Denyer (2012) describe four categories of synthesis approach; aggregative, integrative, interpretative and explanatory. In this instance, an integrative approach was adopted to bring together quantitative and qualitative research papers found through the SLR, while some interpretative synthesis (i.e. comparing data across studies to identify higher level themes) was also applied. Rojon et al., (2021) stated that integrative synthesis is best suited when comparing two or more data collection methods, and where the review is seeking answers to predetermined questions. It can be used effectively in practice-oriented applications such as this. Reflective thematic analysis was used to aggregate main themes together within the synthesis.

4.5. Use of Quality Assessment Criteria

A key component of the SLR methodology is the critical evaluation of the research identified by the review. The methodology developed by Snape et al. (2019) was chosen for the quality assessment of the papers identified. This provided a commonly used and recognised set of standard criteria for evaluating key aspects of the research. It also provided a framework which enabled the evaluation of both qualitative and quantitative evidence. It has also been effectively applied across a range of occupational-focused literature reviews (e.g. Donaldson-Feilder et al., 2019). It is noted that other frameworks such as Hong and Ploye (2018) are also available for mixed study reviews. Thresholds were applied, to categorise the total number of criteria met into an overall quality rating for the paper. The rationale for using predetermined quality assessment criteria was to minimise the degree to which inconsistency and bias could influence the outcomes of the review. Separate criteria were applied to quantitative and qualitative papers identified by the review.

4.6. The Criticisms of using a Systematic Literature Review

While the SLR methodology offered many benefits as outlined above, it does have drawbacks. Owens (2021) highlighted that SLR methodology offers a retrospective, observational research design, which can be subject to systematic and random error. As outlined earlier, these risks can be partly offset through use of effectively designed search criteria and consistent quality criteria. The approach can time-consuming (Snyder, 2019), and it has also been argued that the SLR methodology can lead to narrow conclusions, given the homogeneity of evidence that is captured on the particular topic. Petticrew et al. (2019) highlighted the need for care in framing SLR review questions when

reviewing interventions that have been being conducted within complex systems (e.g. workplaces). This guidance was considered when drafting questions, to check whether extraneous organisational and personal variables (that might be influencing the outcome of the intervention) had been measured and assessed.

4.7. Alternatives to Systematic Literature Review

There are a number of alternative review methods available alongside the SLR methodology. Other approaches to the review might have included meta-analysis (Hunter & Schmidt, 2004). While this provides an alternative, systematic methodology, it would not have been a valid choice in this instance due to the limited number of relevant papers available, and the qualitative nature of many of the papers identified through the review. Snyder (2019) highlights while that there are a number of different methodological approaches to conducting a literature review, many of these are more ad-hoc when compared to the SLR approach, and lack thoroughness and rigour. In her review of literature review methodology, she argues that semi-systematic or narrative reviews have been conceptualized differently across different researchers, and may focus on the evolution of a topic over time. They can be useful for detecting themes and theoretical perspectives, but will have less replicability than the SLR approach. Integrative reviews often synthesise research with the aim of developing new theoretical frameworks. While integrative synthesis has been used within this study, this is within the broader context of recognised systematic literature review methodology. Snyder (2019) flagged that this type of review is relatively rare, and at times can lack the structure of a systematic literature review, and may simply reflect a summary of the studies rather than a true integration of the findings. Argument/thematic reviews can be used to advocate a particular viewpoint, or an expert review of the literature. As Briner and Denyer (2012) argue, such approaches are commonplace in management and organisational studies, but often lack systematic methodology, and are often open to researcher bias.

5. Study 2 – Empirical Study

5.1. Research Design

Study 2 involved the development and feasibility testing of a prototype toolkit to support managers and employees in minimising potential negative impacts. Past research has shown that many intrapersonal, interpersonal and contextual factors can influence individuals' experience and reaction to out of hours mobile ICT demands. There are many established methodologies for intervention design; however, as the research would benefit from the active involvement of relevant stakeholders from a range of different backgrounds in the design process, a co-design approach was chosen as the appropriate approach. Co-design approaches aim to maximise the chance that individual and organisational differences would be accounted for within the toolkit materials developed (e.g. Leask et al., 2019). The co-design methodology harnessed the experience and expertise of end users throughout the design process.

5.2. Research Strategy - Rationale for Toolkit Development Model

The underlying research philosophy emphasised the constructivist nature of this field, and the complexity of factors that would influence an individual's experiences of out of hours mobile technology demands. This highlighted the need for a flexible and practical solution, which would cater for differing users' experiences and needs. The toolkit approach naturally sat well with this philosophy. To better understand the nature of co-design approaches, recent examples of toolkit development using the co-design methodology were reviewed. Examples are included in Table 4:

Authors	*Context*	*Method*
Blake et al. (2022)	Mental Health Manager Training Programme	Co-design
Dennett et al. (2022)	Cancer Survivors Exercise Therapy	Co-design
Mudge et al. (2020)	Living Skills for Neurology Patients	Co-design
Smith et al. (2022)	Literacy & Language Toolkit for Migrant Students	Co-design
Ward et al. (2018)	Healthcare Leadership to Improve Safety Culture	Co-design

Table 4 – Recent examples of published toolkit co-design initiatives.

In each of these studies, service providers and users have participated in a longitudinal co-design process, to produce a set of resources designed to address a particular challenge. Procedures, strengths and limitations from these papers were drawn on to inform the co-design approach used in this study.

5.3. Research Strategy - Rationale for Using Co-Design Methodology

The principle of co-design (alternatively known as co-creation or participatory design) has gained increasing recognition as an effective approach to maximising the success of an intervention, by means of involving end users throughout the design process (e.g. Davies et al., 2016). It has been defined as a research method that combines generative and exploratory research with developmental design (Sanders & Stappers, 2008; Leask et al., 2019). The approach has become increasingly prevalent in healthcare settings (e.g. Ward et al., 2018; Slattery et al., 2020), and (as shown in Table 4) is now employed across a broad range of sectors. It is particularly applicable in areas of practice that have an emerging, rather than highly developed, evidence base (Leask et al., 2019). Slattery, Saeri and Bragge (2020) conducted a rapid review of co-design applications in health. They found that the effectiveness of co-design methodology has rarely been evaluated empirically or experimentally. However, qualitative observations indicated that design of materials was perceived as more acceptable by end users if it had been co-designed. They also observed that co-design could results in increased costs and time commitment, as well as risking tensions between researchers and end users in terms of decision making.

In the current context, co-design provided a methodology through which input from relevant stakeholders and potential end users can be captured and utilised throughout the design process. This is particularly relevant given the inductive / constructivist approach to Study 2, and the recognition that each participant will have different experiences and requirements. The co-design approach allows the synthesis of findings of the systematic literature review with the direct experiences of participants. In particular, harnessing the direct, personal experiences of managers, employees and HR professionals of working with out of hours demands was seen as critical to creating a resource that had real world value, and which encapsulated participants' feedback and views from across multiple roles and sectors. The choice of co-design methodology meant that the research time horizons would be longitudinal, with the co-design process lasting for five months. The design of the co-design methodology was based around the framework, principles and recommendations laid out by Leask et al. (2019), following their review of a range of co-design case studies and published literature.

5.4. Research Strategy - Rationale for Focus Group Methodology

Focus groups were chosen as the preferred means of gathering data. This format was chosen as it has been regularly used in past co-design toolkit development studies (e.g. Sezier et al., 2018). Focus group methodology aims to gain understanding about how people think or feel about a particular issue, idea, product or service (Krueger & Casey, 2015). The approach reflects the constructionist philosophy, allowing participants to share their experiences and insights so that (across multiple focus groups), trends or patterns in perceptions can be identified through careful analysis of the discussions (Krueger & Casey, 2015). As the focus groups were being run online, the methodology was designed to take into account the critical success factors identified by Daniels et al. (2021) for online focus groups. These included the stability of group numbers (accounting for late arrivals etc.), ensuring availability of appropriate technology, suitable participant environment, evaluation (and the suitability of data captured) and participant recruitment.

5.5. Alternative Design Approaches

Alternative methodologies that might have been employed in this instance include traditional top-down, researcher-led design (Leask et al., 2019). This would have been heavily based on literature review, and the researcher's judgement on the content and format of the toolkit. Such an approach would have lost the personal insights gained from sourcing participants from a range of sectors, and would have almost inevitably been skewed by the researcher's personal perceptions and experiences around priorities and usability. Such an approach therefore is likely to have limited the generalisability and relevance of the toolkit. Conversely, the approach of meta-design puts the design responsibility primarily in the hands of end users (e.g. Maceli, 2013). The rationale of this approach is that in constantly evolving environments, only users themselves can anticipate their own needs. While the involvement of end users is important, the practicalities of such a user-owned design methodology would not be relevant or practicable for this study. Delphi methodology (Dalkey & Helmner, 1963) could also have been an alternative design approach. This would have involved iterative rounds of consultation with experts to reach a consensus solution. Niederberger and Spranger (2020) created a map of Delphi methodology applications, drawn from 12 systematic reviews. From the four types of application they observed, the Type 1 approach (qualitative aggregation of ideas) would be most relevant in this particular context. The typical applications of Delphi methodology observed by Niederberger and Spranger (2020) included resolving controversial judgements, developing specific measurement tools, and identifying the current state of knowledge in a particular area. To this end, while Delphi methodology would have been relevant in addressing

this type of specific research objective, iterative co-design methodology used was deemed to be more appropriate for producing the toolkit in Study 2, as it recognised the emergent and inductive nature of the design process (e.g. Greenhalgh et al., 2016).

5.6. Rationale for Sampling Strategy

No restrictions were placed upon the sectors / industries that participants were drawn from, and focus groups had cross-sector representation (including public, commercial and third sector). The aim of this strategy was to maximise the generalisability of the findings, although it is recognised that there are likely to be differing imperatives across different sectors. Robson (2002, p. 286) presents counterpoint arguments for the use of heterogenous or homogenous samples in focus groups, and these guided the initial decision to use homogenous samples in terms of organisational role (e.g. having all managers in one group), while having heterogenous samples in terms of sector / industry. In practice, scheduling issues meant that organisational roles were also mixed when the focus groups were held. While this meant that different role holders' views were being captured in the same forum, the exchange of ideas and experiences across the representatives of different roles and sectors arguably enabled a richer and more stimulating dialogue. It also minimised the risk of 'groupthink' (Janis, 1972) arising from more homogeneous views being shared by representatives of the same role group. In the specific context of this research, the more heterogeneous nature of the sample allowed for those managing teams and those being managed to openly share their experiences and views. Importantly, the manager / leader group would also experience out of hours demands from either their own leaders or external clients, which allowed for exploration of how this dynamic would inform their own expectations and practices towards the individuals they led. The self-selecting nature of the participant group allowed for representation across different sectors. This allowed the research to be inclusive of sectors which may have more established policies around work-life balance (e.g. large, public sector institutions) while also drawing on the experiences of those working for smaller organisations in which responsiveness and immediate commercial demands may result in a different set of expectations for employees. This inclusive approach to sampling would maximise the chance that the full range of employee experiences could be reflected in the research.

The proposed sample sizes were guided by the recommendations of Hennink, Kaiser and Weber (2019), who acknowledged that it is not possible to determine at the outset the number of focus groups needed to achieve sufficient data and thematic saturation (i.e. the point at which issues begin to be repeated and further data collection becomes redundant). Hennink et al. (2019) found code

saturation was reached after four focus group discussions, and argued that this finding is consistent with that of other research. For example, Coenen et al. (2012) found code saturation after five focus groups, and Guest, Bunce and Johnson (2016) finding code saturation after 3-6 focus groups). They conclude from this that relatively few focus groups are needed to generate the majority of new issues in a study. In terms of *meaning* saturation, they propose conducting at least two focus groups for each demographic stratum – In this instance, the key demographic strata are the organisational role played by the participant, and their natural preference in terms of segmentation/integration. For each of the focus groups, the aim was to have an even split between segmentation and integration preferences, and a range of perceived telepressure, as measured by scales from Kreiner (2006) and Barber and Santuzzi (2015). Ideally, the number and range of focus groups would have been extended further, taking into account other demographic strata (e.g. the sector in which each participant works). While timing and research constraints in this instance meant that this would not be possible, the findings of Hennink et al. (2019) indicated that the proposed number of focus groups would still produce meaningful findings.

In terms of the sample size of each focus group, Carlsen and Glenton (2011) reviewed 220 papers using focus group methodology, and found median group numbers of 5 – 8 participants within each focus group. For this research, the targeted number of participants per group was 6, resulting in a total planned sample of 18. This exceeded the recommended total sample of 10-12 participants in a co-design process, as set out by Leask et al. (2019). However, the increased sample was felt to be warranted in this instance, given the use of multiple focus groups, and the increased evidence this would provide across participants' experiences in different roles and sectors.

5.7. Data Analysis – The Rationale for Using Reflexive Thematic Analysis

Braun and Clarke (2006) defined thematic analysis as "a method for identifying, analysing, and reporting patterns (themes) within data". Braun and Clarke (2021) emphasise that there is no one singular approach to thematic analysis, and highlighted the need for researchers to be clear of the rationale and philosophy underpinning their choice of methods. The reflexive thematic analysis approach used followed the six stage model promoted by Braun and Clarke (2021):

1) Data familiarisation & writing familiarisation notes
2) Systematic Data Coding
3) Generating initial themes from coded and collated data
4) Developing and Reviewing Themes
5) Refining, Defining & Naming Themes
6) Writing the report

The above stages are not intended to operate in a rigid, linear way, but instead require the researcher to iteratively review the data in order to develop effective codes and themes. Braun and Clarke (2019) highlight that the analysis will also require reflexivity on the part of the researcher, recognising that the interpretation of qualitative data is about 'meaning-making', and should not be an attempt to discover a definitive truth that is hidden within the data. Reflexivity during the thematic analysis process was captured through the Reflective Process Report. This provided an important anchor point around how my own worldview and opinions around the subject matter might be influencing the analysis of the data. This reflects the philosophy of Reflexive Thematic Analysis (e.g. Braun & Clarke, 2021) – i.e. the analysis was conducted with a recognition that each researcher's interpretation of data is likely to be subjective and organic in nature, and therefore using more positivist strategies such as reliability analysis of coding accuracy (e.g. Joffe, 2012) are likely to be less suitable in this instance. Ultimately, for this work, the content of the toolkit – rather than the coding framework itself – was the key output, which was being evaluated by the co-design group in Round 2 sessions.

As highlighted by Braun and Clarke (2019), there have been many interpretations of the concept of thematic analysis, and the authors cite a range of concerns about how the concept has been applied since their initial paper in 2006. Specifically, they argue that many applications of thematic analysis lack reflexivity, and are conceptually confused. Prior to undertaking the analysis, I completed a training course in thematic analysis with Dr. Nikki Hayfield (e.g. Terry & Hayfield, 2021), which provided an important, practical steer about how to undertake each of the stages in practice, including building reflexivity into the analysis.

The full dataset for Round 1 focus groups was initially reviewed, and familiarisation notes were made around high level observations, prior to starting any coding. This stage helped to provide a broader perspective of the overall body of evidence before starting the coding process. Coding was then completed on all transcripts, finding a 'pithy label' that captures what was important about each coded bit of data (Braun & Clarke, 2013). During this stage, care was taken to reassign existing codes

where appropriate to do so, while being vigilant for new and relevant aspects emerging within the data.

The phase of developing and reviewing themes was iterative, with different thematic structures being evaluated before finalising the structure. The intention was to ensure that themes were developed inductively through following the coding process, rather than adopting a more deductive approach with preconceived ideas of themes to identify. In reality, the reflexive thematic analysis process included both inductive and deductive elements, which reflected the overarching philosophy of critical realism. The inductive element was applied through allowing the coding to inform the sub-themes, and in turn, the themes, through clustering and making sense of how the data most effectively aggregates together, without preconception. However, in reality, the knowledge of the outcomes of the SLR, as well as knowledge of pre-existing frameworks, will have shaped the logic of some of the categorisation. For example, the IGLOO framework used by Neilson et al. (2018) to categorise the resources needed by employees with common mental disorders to return to work defines levels within the organisation as Individual, Group, Leader, Organisation, and Overarching. Such frameworks closely reflect aspects of the final clustering emerging from the reflexive thematic analysis, and was also likely to have influenced the theme development process.

5.8. Reflexivity statement

In analysing this data, a constructivist philosophy was adopted – i.e. recognising that the reality described by each participant is their own construction, rather than an independent, objective reality. This was important in recognising that the unique viewpoints held by each participant would need to be accounted for in the analysis, ensuring that the final toolkit content remained inclusive to all of these diverse perspectives, rather than attempting to narrow the content to a prescriptive and rigid 'to-do' list. I also had to remain aware of his personal experiences of managing out of hours demands. In the past, these had included both segmentation and integration strategies, with my working pattern often having fluid boundaries. This had resulted in fairly frequent use of work-related devices out of hours demands, and occasionally (and inadvertently) creating out of hours demands for others through these working practices. At times, this had reflected the pattern of 'struggling segmentor' behaviour – i.e. understanding the need to create clear boundaries, but experiencing difficulty in doing so. It was therefore important to set aside any personal preconceptions and experiences on the topic, in order that the was no unconscious screening or judgement around participants' personal experiences and priorities in this domain. This was assisted

through maintaining a record reflexivity record during the analysis, in line with the recommendations of Terry and Hayfield (2021).

6. Summary

This section has provided an explanation for the research paradigm and philosophical standpoint with which the research was conducted. This has been linked to the methodological choices which have been made for both Study 1 and Study 2. The following sections will provide further detail of the two studies.

Chapter 3: Study 1 - Systematic Literature Review

Title: A systematic literature review of interventions and strategies used for managing the negative impact of out of hours work-related mobile ICT demands.

Abstract

Recent growth in the use of mobile technology in the working context has increasingly blurred the boundaries between work and non-work (e.g. Kreiner et al., 2009) There is a growing body of evidence showing the potential negative effects that such demands can have on individual well-being. However, the evidence around effective strategies for mitigating these negative impacts out of hours is less clear, with no systematic reviews conducted to date. The purpose of this systematic literature review was to explore the strategies and interventions which have been used, and their relative success. The review structure followed the five stages recommended by Denyer and Tranfield (2005). Searches identified a total of 2064 papers, of which 13 met the inclusion criteria. Studies included both qualitative and quantitative designs and were assessed against the Snape et al. (2019) quality standards. Overall, findings showed that the evidence base is currently at the initial to promising stage. The studies highlighted strategies being used at individual, leadership and organisational level. However, structured evaluative evidence was limited, and there were a number of methodological limitations where evaluation had occurred. There were also mixed findings in terms of how clearly the strategies had been defined. The implications for future research and practice are discussed.

1. Introduction

The increased prevalence of mobile technology in the workplace has changed the way in which we view the boundaries between work and non-work time. With current average UK smartphone usage standing at 4.8 hours a day per person (data.ai, 2022), mobile technology has become a central part of our everyday lives.

In a work context, the ability to access work-related content anytime and anywhere has increased opportunities for flexible working and employee flexibility (e.g. Adisa et al., 2017). Schlachter et al. (2017) conducted a narrative synthesis of voluntary work-related mobile ICT usage in non-work time, and found that it was not inherently good or bad, but its impact depended on factors such as organisational context, personal characteristics and boundary management. However, the research in this area over the past 15 years has provided increasing evidence that the flexibility brought about through mobile devices often comes with a human cost. Research has shown that out of hours ICT usage can result in work to home conflict (Gadeyne et al., 2018), negative impact on general health and well-being (Adisa et al., 2017), negative impact on psychological detachment (Derks et al., 2014; Cambier et al., 2019; Santuzzi & Barber, 2018), negative rumination and affect (Park et al., 2020), physical and cognitive exhaustion (Barber & Santuzzi, 2015), absenteeism (Barber & Santuzzi, 2015), and insomnia / poor sleep quality (Park et al., 2020; Barber & Jenkins, 2014; Braukmann et al., 2017).

Many researchers have recommended strategies which may be of benefit in mitigating these negative effects. These include increasing awareness of the risks of extensive out of hours ICT usage (Cambier et al., 2019; van Laetham et al., 2018), practical steps to minimise out of hours disturbances (e.g. changing phone settings – Cambier et al., 2019), supervisors and organisations setting clear guidelines / policy around out of hours availability (Van Laethem et al.,2018; Derks et al., 2015; Adisa et al.,2017; Choroszewicz & Kay, 2020; Barber and Santuzzi, 2014; Cambier et al. 2019), negotiating tailored agreements between individuals and organisations (Barber & Santuzzi, 2015; Ohly & Latour, 2014; Kossek & Lautsch, 2012), training in recovery activities and detachment strategies (Ohly & Latour, 2014; Cambier, 2019), and offering employers training in family supportive supervision behaviours (Barber et al., 2019).

There are a number of concepts important to the study of out of hours mobile ICT demands that can inform our understanding of appropriate strategies, and how these may vary between different individuals. Workplace *telepressure* has been defined as a compulsive pressure or urge to respond to work-related messages (Barber & Santuzzi, 2015). Research has shown that employees experiencing telepressure have lower levels of satisfaction with work-life balance, as they find it more difficult to psychologically disengage from work (Grawitch et al., 2018; Barber, Conlin & Santuzzi, 2019).

Boundary management refers to the strategies and tactics used by individuals to establish, maintain and adapt the boundaries between work and family (Nippert-Eng, 1996). Individuals will take differing approaches to boundary management. These are referred to segmentation preferences – i.e. the degree to which aspects of work and home domains are kept separate from one another – cognitively, physically and mentally (Kreiner, 2006). In contrast to a preference for segmentation (i.e. maintaining a clear demarcation between home and work), integration represents the blending of various aspects of work and home. The distinction is not straightforward, with individuals potentially applying both integration and segmentation strategies in different contexts (e.g. Kreiner et al., 2009). Moreover, factors outside the individual's control may mean that they struggle to operate within their natural segmentation preference in a given situation.

While there is a logical linkage between researchers' recommendations for strategies and interventions and the negative impacts that they are trying to mitigate, the picture is less clear on the practical effectiveness of these different strategies and interventions. Richardson (2017) found that intervention studies relating to the effects of technology on recovery and detachment were relatively rare, and the synthesis conducted by Schlachter et al. (2018) showed that the majority of the 56 studies they reviewed were cross-sectional in nature. The authors highlighted that when considering interventions such as the switching off email servers after hours (e.g. Potter, 2011) there is a need for more primary studies to understand whether this type of intervention is effective.

The picture is complicated by the need for strategies and interventions to be used in combination, to ensure that the strategies match individual preferences, while accounting for leadership, organisational and cultural expectations. As such, it is important to explore the extent to which research has assessed the relative benefits of different strategies when used in combination, or whether individual strategies have been evaluated in isolation. Finally, we can see that strategies and interventions can range from simple tactics implemented at an individual level (e.g. changing phone notification settings), through to full national legislative changes (e.g. the French 'right to disconnect' legislation – Pansu, 2018). Again, it is important to understand the extent to which these factors at different levels have been evaluated, as well as their combined use.

2. Objectives of the Systematic Review

The primary objective of this systematic review was to establish what interventions and strategies have been used for managing the negative impact of out of hours work-related mobile ICT demands. The specific review question to be addressed was:

- What interventions and strategies are effective for managing the negative impact of out of hours work-related mobile ICT demands?

The sub-questions to be addressed were:

a) What are the negative impacts that these interventions and strategies seek to mitigate/reduce?
b) What factors influence the success of these interventions and strategies?

3. Method

3.1. Review Structure

This study followed the five stages for completing a systematic literature review as outlined by Denyer and Tranfield (2009). These are 1) question formulation, 2) locating studies, 3) study selection and evaluation, 4) analysis and synthesis, and 5) reporting and using the results.

3.2. Question Formulation

A pre-review of the literature was initially conducted between November 2020 and January 2021. This covered literature related to the field of out of hours mobile ICT demands, and enabled an initial exploration of current gaps in the evidence base. The research question was formulated on the basis of the findings of this pre-review. The research question was refined iteratively as the evidence base was reviewed further, through consultation with supervisors, practitioners in occupational psychology and practitioners in human resources. A full systematic literature review (SLR) protocol was developed prior to the review commencing, outlining the key stages that would be completed.

3.3. Locating Studies

In March 2021, a search was completed using three databases; PsychINFO, Business Source Premier and Scopus. The search criteria were generated through the pre-review of the literature, and further discussions with literature search experts (Birkbeck Library and academic supervisors). Again, a number of iterative revisions to the criteria were made, to ensure that all relevant material was being captured, while minimising the number of irrelevant articles identified. The final search criteria are outlined in Table 5:

	AND	AND
Always on	ICT	Train*
After hours	Mobile Device	Develop*
After-hours	Mobile technology	Strategy
Out-of-hours	Smartphone	Intervention
Out of hours	Smart phone	Policy
Telepressure	E-mail	Legislation
Work-to-home conflict	Email	Boundary setting
Work to home conflict	Electronic mail	Boundary management
Work-home interference	Electronic communication	Boundary control
Work home interference	Digitisation	Psychological detachment
Work-family conflict	Virtuality	Recovery
Work family conflict	E-work*	Right to disconnect
Non-work	Digital	Segmentation
Off-job time	Communication technolog*	
Weekend-work	Telepressure	
Agile Work		
Work life boundary		
Work-life boundary		
Information Overload		
Work-Life Integration		
Work life balance		
Work-family boundary		

Table 5 – Systematic Literature Review Search Criteria

3.4. Study Selection and Evaluation

The papers identified through the application of the search criteria were initially reviewed against a SPIO framework (Robertson et al., 2015). The details of the criteria are shown in Table 5. For the purposes of this research, studies that included either interventions or strategies were included. Intervention studies are designed to measure the change in a situation or individual after a systematic modification has been applied (APA Dictionary of Psychology, n.d.). In this instance, such studies would include the systematic evaluation of structured interventions to minimise the negative impact of out of hours mobile ICT demands. Studies were also included if they included the application of a specific strategy or strategies, without this necessary forming a full intervention study. A strategy was considered to be a programme of action designed to achieve a goal or

particular task (APA Dictionary of Psychology, n.d.). In this instance, this could be a specific cognitive, behavioural or systematic method that aims to minimise the negative impact of out of hours mobile ICT demands. In each case, interventions or strategies might occur at an individual, leader, organisational or societal level.

	Inclusion Criteria	Exclusion Criteria
Study Design	• Empirical research, quantitative, qualitative or mixed methods. • Publication: English language, peer reviewed	• Grey literature • Practice Surveys • Non English language publications • Discussion Articles • Articles lacking empirical research.
Population	• Working Age Adults (18+) • UK or International • Employed by an organisation. • Work-related users of mobile technology • Participants who use mobile technology for work-related purposes out of hours	• Children / adolescents • Participants without regular employment • Participants not using mobile technology for work purposes out of hours.

Intervention	• Specific interventions and strategies designed to manage the negative impact of participants' out of hours work-related mobile ICT usage. These might be at an individual group, leader, organisation or societal level. Might include:
	  • Individual Boundary Management strategies
	  • Group-level specified shared expectations.
	  • Leader-led initiatives
	  • Organisational Policies
	  • Legislative directives.
		• Studies relating to out of hours work-related ICT usage, but which do not have a clear intervention or strategy.
		• Studies focusing solely on the beneficial effects of out of hours work-related mobile ICT usage.

Outcomes	• Any outcome in a work setting that relates to the mitigation of negative impact.	

Table 6 – SPIO Inclusion / Exclusion Criteria for Systematic Literature Review

The SLR methodology was followed, with the outcomes reported in the PRISMA diagram (Figure 1) (Moher et al., 2009). A total of 2064 titles were reviewed during the title sift review stage, with a considerable proportion of these being discounted as they had no direct relevance to the topic of interest (e.g. broader technical journal articles about mobile technology). During the title sift stage, an independent, parallel review was conducted for 10% of the titles. This independent review helped to ensure the accuracy of decisions around how the inclusion/exclusion criteria were being applied. Any disagreements between reviewer selections were resolved through discussion. Cohen's Kappa coefficient was used to assess the extent of agreement between the two reviewers for this title sift stage. The coefficient was 0.77, with a 97.1% level of agreement, which was deemed to show sufficient agreement to progress to the next stage of the SLR (i.e. showing a substantial level of agreement between reviewers – Landis & Koch, 1977).

For the papers that appeared to meet the inclusion criteria (n=130), the abstracts were obtained. These were reviewed independently by two researchers. Attention was paid to whether the papers met each of the criteria, particularly in terms of specific reference to mobile technology, out of hours use, and the application of strategies or interventions to manage these demands. Any disagreement between the two reviewers' selection decisions were resolved through discussion. The Cohen's Kappa coefficient for the abstract sift was 0.81, and resulted in 41 papers initially being identified. For some of these papers, it was not possible to determine from the abstract alone whether the paper met the inclusion criteria, and therefore the full paper was accessed and reviewed to inform the decision. Once this full review had been completed, a total of 12 final papers were identified at meeting the selection criteria.

One additional paper meeting the inclusion criteria (Schlachter, 2017) was added to this final list, as this had not been identified through the electronic searches. This was an unpublished PhD, which was included on the basis that it met all other criteria, and included an intervention specifically targeting out of hours ICT usage. This gave a final total of 13 papers for inclusion in the review. Due to time pressures, it was not possible to put out a call to relevant academic groups and networks to solicit unpublished works, pre-publication studies, etc.

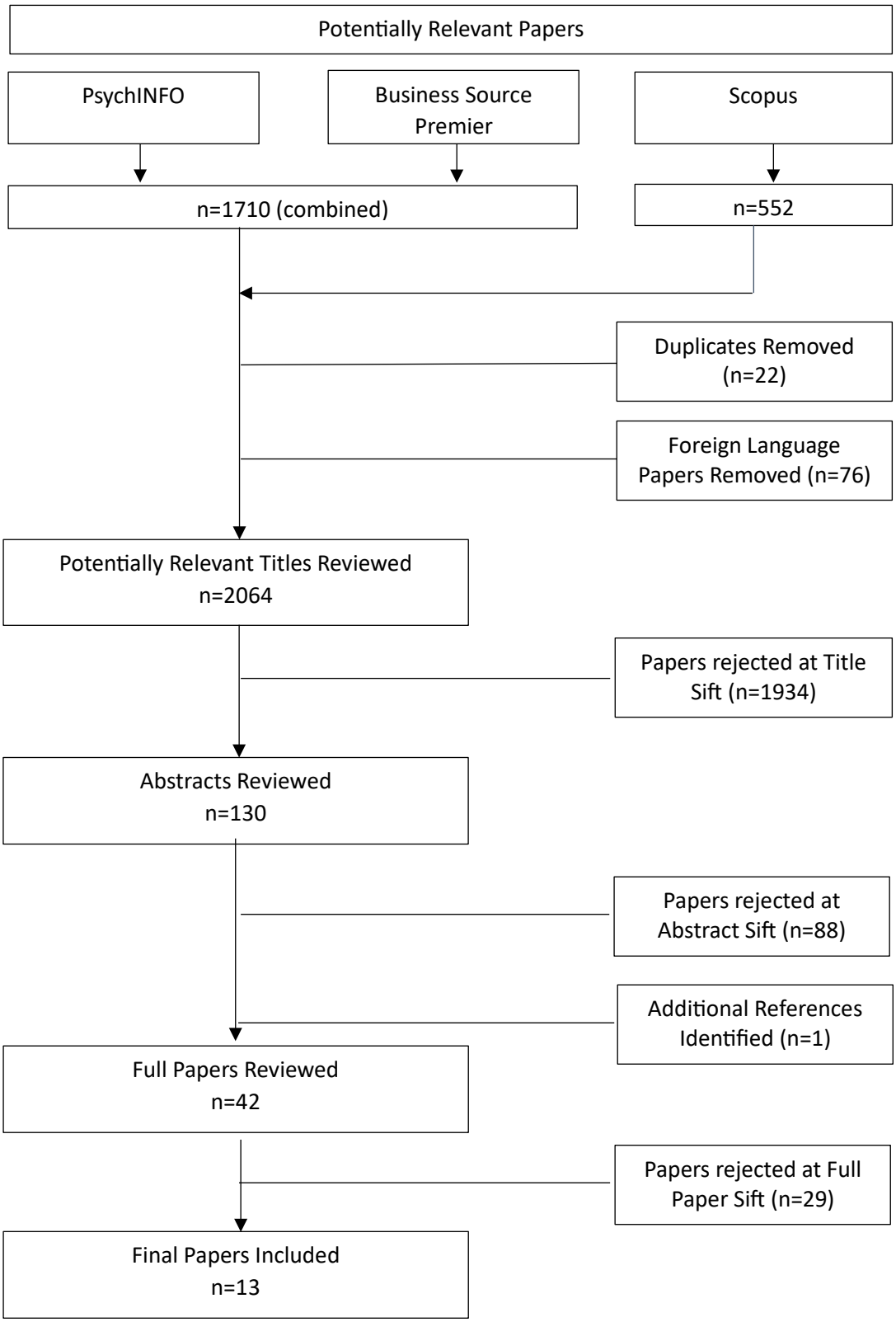

Figure 1 – PRISMA Flow Diagram of Systematic Literature Review

3.5. Data extraction

A data extraction tool was developed through an iterative adaption process, through initially reviewing tools used by other researchers. The tool started with a generic template supplied by Birkbeck, University of London, which included a range of fields relating to participants, study aims, interventions included, findings etc. This was refined through discussion with supervisors and occupational psychologist practitioners, to give sufficient confidence that all relevant fields had been included. Additional fields which were added included details around mobile technology access, working hours / conditions and expanded participant demographic details. Data was extracted from the selected papers using a range of fields, as recommended by Garrard (2007). These included information around design, sample size and population, interventions used, analytical methods, outcome variables, and any moderators or mediators explored. Each paper was reviewed in full, and relevant data extracted for the synthesis stage. The data was reviewed by a second researcher for consistency.

3.6. Quality assessment

The quality of the studies was assessed using the quality inclusion criteria proposed by Snape. Et al. (2019) for intervention studies. As the selected studies included both quantitative and qualitative research, both checklists provided by Snape et al. (2019) were used to evaluate the quality of the papers.

Each criterion was assessed using the following categories (as recommended by Snape et al., 2019): Yes, No, Can't Tell, N/A. Once each paper had been evaluated, the evaluations were reviewed by a second reviewer to ensure accuracy of classification. This confirmed that the evaluations researched were a fair assessment of the evidence provided in each paper.

A pre-agreed banding system (<33% - very low, 34-49% - low, 50-65% - moderate, 66%+ - high) was used to assign the quality evaluation for each paper. These quality evaluations were used to develop the evidence statements and were considered when deriving conclusions from the review, with greater weighting placed on findings that had a higher quality evaluation.

3.7. Data synthesis

As the review included relatively few papers that took the form of recognised intervention studies, a quantitative meta-analysis was considered inappropriate in this instance. Consequently, the findings are presented in narrative form.

Once the data extraction and quality evaluation had been completed, key themes were identified from across the papers. Each paper was also assessed to determine the extent to which it made a meaningful contribution towards answering the research questions. The themes extracted at this stage were critiqued by an external reviewer, to assess the extent to which the extracted data had been synthesised into legitimate themes, as well as implications for future research. This process took a number of iterations and discussions with the independent reviewer to finalise the findings.

4. Results

4.1. Overview

The majority of the thirteen papers included in the review had appeared in peer review journals: Barber, Conlin and Santuzzi, 2019; Choroszewicz and Kay, 2020; Ciolfi and Lockley, 2018; Cousins and Robey, 2015; Derks and Bakker, 2014; Derks, ten Brummelhuis, Zecic and Bakker, 2015; Duxbury et al., 2014; Eichberger et al. 2015; Gaudioso, Turel and Galimberti, 2017; Park, Liu and Headrick, 2020 and Pfaffinger, Reif and Spieß, 2020. One PhD study was also included (Schlachter, 2017). Two of the 13 papers identified (Gaudioso et al., 2015; Gaudioso et al., 2017) covered the same research study, and therefore have been considered only once in the review.

The journals that the papers were sourced from covered a broad range of fields; organisational psychology, management, organisational behaviour, stress and well-being, technology and human machine interaction.

The majority of the papers identified smartphones as being the mobile technology medium through which participants were accessing work-related content out of hours.

4.2. Study Characteristics

A summary of the study characteristics can be found in Table 7. The studies were completed across a range of countries; 46% in North America (4 in the United States, 1 in Canada, 1 in US and Canada

combined), 46% in Europe (3 in Germany / German speaking countries, 2 in the Netherlands, and 1 in UK), and 8% split between North America and Europe (1 in Canada and Finland combined)

There was a range of methodological approaches, with 31% qualitative (four papers), 62% quantitative (8 papers) studies and 8% mixed method (one paper). In terms of research design, only 15% (two papers) included a control group. The majority of studies used either cross-sectional design (with survey or interview methodology) or a short-term longitudinal diary study. From the qualitative studies, one of these (Duxbury et al., 2014) was a longitudinal study conducted over an extended seven month window between 2007 and 2008, tracking the adoption and use of smartphone technology, using semi-structured interviews.

Cousins and Robey (2014) conducted two cross-sectional field studies (in 2004 and 2008 respectively) which used semi-structured interviews and observations to analyse workers' use of boundary management strategies with mobile technology. Cousins and Robey (2015), Ciolfi and Lockley (2018) and Choroszewicz and Kay (2020) all used a cross-sectional design with semi-structured interviews, exploring boundary management styles and strategies in the context of out of hours mobile ICT usage.

From the quantitative studies, a number took the form of short-term longitudinal diary surveys (Derks & Bakker, 2014; Derks et al., 2014; Eichberger et al., 2020; Park et al., 2020) which captured data from participants for periods ranging from five days (Derks & Bakker, 2014) to five weeks (Park et al., 2020). Gaudioso et al. (2017), Barber et al. (2019) and Pfaffinger et al. (2020) all used a cross-sectional survey design. Of these, Derks et al. (2014) was the only study to use a control group of non-smartphone users.

Only one of the studies took the form of a randomised control trial. Schlachter (2017) conducted an experimental field study evaluating a three week online modular self-management training intervention around out of hours work-related voluntary ICT use. This study assessed the longevity of the intervention's effectiveness over a 12 week period post-intervention, with outcomes for the experimental group compared to those for a randomly allocated control group.

Author and Date	Study Location	Methodological Approach	Study Type / Design	number of participants	Participant – Gender	Intervention or Strategy studied
Barber, L. K., Conlin, A. L., and Santuzzi, A. M. (2019).	US	Quantitative	Cross-sectional – Survey	Study 1: N=254 Study 2: N=409	Study 1: Male=168 Female=86 Study 2: Male=210 Female=199	The use of work recovery experiences by employees
Choroszewicz, M., and Kay, F. (2020)	Finland & Canada	Qualitative	Cross sectional – semi-structured Interview	N=34	Male=34	Boundary management strategies
Ciolfi, L., and Lockley, E. (2018).	UK	Qualitative	Cross sectional – semi-structured Interview	N=26	Male=14 Female=12	Strategies for handling work/life demands relating to digital technologies
Cousins, K., and Robey, D. (2015).	US / Canada	Qualitative	Cross sectional – two field studies Study 1: semi-structured Interview and observations. Study 2: telephone interviews.	Study 1: N=11 Study 2: N=14	Male=17 Female=8	Use of affordances (features of mobile technology) and boundary management strategies
Derks, D., and Bakker, A. B. (2014).	Netherlands	Quantitative	Short-term longitudinal – Diary Questionnaire over 5 days (within-person design)	N=69	Male=22 Female=47	Psychological detachment and relaxation
Derks, D., ten Brummelhuis, L. L., Zecic, D., and Bakker, A. B. (2014).	Netherlands	Quantitative	Short-term longitudinal – Field Experiment – Diary Questionnaire 6 days over 2 weeks with control group	N=80 (40 smartphone users, 40 control)	Male=62 Female=18	Recovery strategies
Duxbury, L., Higgins, C., Smart, R., and Stevenson, M. (2014).	Canada	Qualitative	Longitudinal Case Study semi-structured telephone at Time 1 and Time 2 (approx. 6 months later)	N=25 (and 9 spouses)	Male=11 Female=14	Boundary management strategies

Author and Date	Study Location	Methodological Approach	Study Type / Design	number of participants	Participant – Gender	Intervention or Strategy Studied
Eichberger, C., Derks, D., and Zacher, H. (2020).	German-speaking countries	Quantitative	Short-term longitudinal - * Online baseline questionnaire * 2 weeks later, diary survey – for 1 week	N=100	Male=42 Female=58	Psychological detachment and cognitive strategies (primary appraisal, secondary appraisal).
Gaudioso, F., Turel, O., and Galimberti, C. (2015).	US	Quantitative	Cross sectional – Survey	N=242	Male=51 Female=174	Adaptive and maladaptive coping strategies
Gaudioso, F., Turel, O., and Galimberti, C. (2017).	US	Quantitative	Cross sectional – Survey	N=242	As Above	As above
Park, Y., Liu, Y., and Headrick, L. (2020).	US	Quantitative	Longitudinal – Diary Study – weekly for 5 weeks	N=546	Male=37 Female=509	Boundary management strategies, communicative strategies.
Pfaffinger, K. F., Reif, J. A. M., and Spieβ, E. (2020).	Germany	Quantitative	Cross-sectional – Survey (3 separate survey studies)	Study 1: n=296 Study 2: n=142 Study 3: n=316	Study 1: Male=143 Female=151 Study 2: Male=50 Female=94 Study 3: Male=132 Female=174	Technostress inhibitors
Schlachter, S. (2017).	Germany	Quantitative	Experimental field study 3 week intervention (with waitlist control group)	N=55 (19 in intervention and 36 in control	Male=26 Female=29	3 week intervention covering need for recovery, boundary management strategies, and overcoming barriers to boundary management.

Table 7 – Characteristics of Studies Identified through the SLR

4.3. Participant Population Characteristics

There was a broad variation between studies in terms of the number of participants, with sample sizes for individual studies ranging from 11 to 854. The total sample across the 13 papers was 2928. This figure accounts for all participants in papers which included multiple studies with different samples (Barber et al., 2019; Cousins & Robey, 2015; Pfaffinger et al., 2020).

Where gender information was provided, 60.5% of participants were female (1563 of 2582), and 39.5% male (1019 of 2582). The age of participants was reported in 84.6% of papers (11 studies) – of those studies that reported mean age of participants, the median value was 38.4 years.

The studies varied in terms of the specificity of participant roles and organisational contexts. Some samples focussed on single professions (e.g. Park et al., 2020, using elementary teachers; Choroszewicz & Kay, 2020, using lawyers). Other studies focussed on specific organisational contexts (e.g. Duxbury et al., 2014, using a large pharmaceutical company, and Gaudioso et al., 2017, using a large government-related organisation). Others used more diverse samples sourced from across a variety of organisational contexts (e.g. Ciolfi & Lockley, 2018; Cousins & Robey, 2015; Derks et al., 2014, and Eichberger et al., 2020).

4.4. Intervention & Strategy Characteristics

Relatively few of the papers used an experimental design with a clearly defined intervention structure. Schlachter (2017) was the exception, using a modular online self-management training, which included three weekly modules that were completed at home during participants' non-work time. The themes of the three modules were i) the need for recovery and reflecting on one's own ICT use during non-work time, ii) boundary management strategies, and iii) overcoming barriers to boundary management. The training focussed on changing boundary permeability rather than boundary flexibility. This approach was based of the findings of McCloskey (2016) that permeable boundaries were more likely than flexible boundaries to lead to work-life conflict (permeable boundaries allowing the integration of one role while being present in another – e.g. answering a work call during family time, whereas flexible boundaries allowing the opportunity to shift work to alternative times and locations). Outcomes of the intervention were compared to those of a wait-list control group, and assessed immediately after the intervention, and again at 4 week and 12 week periods following the intervention. A range of hypotheses were tested around the effects of the intervention on participants' frequency of voluntary ICT use, boundary self-efficacy, ICT-related self-

control, psychological detachment, need for recovery satisfaction with work-life balance, and well-being.

For the remaining studies, the intervention or strategies identified were primarily practical behavioural, cognitive or procedural approaches employed by an individual or organisation to minimise negative impacts of out of hours ICT demands. For example, the interview study conducted by Cousins and Robey (2015) captured evidence around three categories of boundary management strategy used by employees – physical, temporal and psychological – and participants' perceptions of their effectiveness.

Derks and Bakker (2014) asked work-related smartphone users to complete a diary survey on five successive workdays, to explore the effect that out of hours activities involving detachment and relaxation would have on work-home interference. In a separate study, Derks et al. (2014) used a field experiment diary study (with an experimental smartphone-user group and control group) to explore the impact of work-related smartphone use on participants' engagement with recovery activities (i.e. psychological detachment, relaxation, mastery and control). Barber et al. (2019) used a survey design to explore the potential moderating effect that recovery activities (i.e. psychological detachment, relaxation, mastery and control) would have on the relationship between telepressure and work-life balance evaluations.

Eichberger et al. (2020) collected daily diary data from 100 employees over a five day period to test whether psychological detachment would mediate the relationship between out of hours ICT-based work and well-being. The study also explored the extent to which cognitive appraisal (both primary and secondary) would moderate the relationship between the out of hours ICT-based work and detachment. Primary appraisal was an individual's evaluation of how harmful a job stressor was for their own well-being. Secondary appraisal was perceived self-efficacy, and the availability of coping resources. They also explored whether cognitive coping (e.g. planning, problem solving, acceptance of demands etc) would moderate the relationship between psychological detachment and well-being.

Park et al. (2020) used a weekly diary study over five weeks to explore the antecedents and consequences of out of hours ICT demands for teachers. In particular, they explored the role that technological boundary management tactics (e.g. switching off the phone) can have on ICT demands, the role that school principals can play in offering work-family support, and the impact this support can have on teachers' boundary control.

Duxbury et al. (2014) conducted a longitudinal interview study which explored the introduction of Blackberry mobile technology into an organisation, and analysed the planned and actual use of the mobile devices. In particular, they evaluated the tactics adopted by employees, taking into account boundary theory (and segmentation preference), the social construct of technology, sensemaking (i.e. the meaning that new adopters take from using the technology), and attribution theory.

Pfaffinger et al. (2020) explored the role that technostress inhibitors and creators play with employees' well-being and detachment. Technostress inhibitors included facilitating technological literacy, providing technical support, and actively involving end users in the introduction and use of new technology in the organisation. Conversely, technostress creators included complexity, uncertainty, overload, and intrusion resulting from the technology. In particular, the researchers looked that the role that technostress inhibitors can have in terms of moderating the effects of ICT demands on well-being and out of hours detachment.

Gaudioso et al. (2017) developed a stress dynamics and coping model to explore how individual coping strategies might mediate the negative impact of techno-stressors, including 'techno-invasion' (i.e. the role of technology in blurring boundaries between work and other life domains). Through their survey study, they evaluated the prevalence and impact of employees' adaptive strategies (i.e. problem focussed – dealing directly with problem, seeking technical support, planning etc.) and maladaptive coping strategies (i.e. denial, disengagement and venting frustration) in reducing work exhaustion.

From the qualitative studies, Choroszewicz and Kay (2020) explored the range of boundary management styles and strategies used by male lawyers in relation to mobile technologies. This explored the impact of cultural and professional norms, and in particular shifting perceptions of fatherhood, and work-family boundary theory. Ciolfi and Lockley (2018) explored how a group of knowledge workers devised strategies for managing boundaries relating to mobile digital technologies, and in particular the role of 'boundary sculpting' (i.e. 'the practices by which boundaries are placed, removed, transcended, thinned or thickened to suit one's practices', Nippert-Eng, 1995, as cited in Ciolfi & Lockley, 2018).

Further detail of the key measures used in each of the studies can be found in Appendix A.

4.5. Primary SLR Question – what interventions / strategies have been found to be effective?

The following section reviews the interventions and strategies that have been evaluated in the research, and the extent to which there is clear evidence of their effectiveness. A breakdown of the overall findings is provided in Table 8. This shows both the factors which influence out of hours mobile ICT activity, and the strategies identified for mitigating its negative impact.

	Individual	Leader	Organisation	Societal
Influencers	• Boundary Management Preferences • Personal Circumstances (e.g. Sense of Agency / Locus of Control • Level of Leadership Support • Organisational / Sector / Profession Culture	• Boundary Management Preferences • Client and External Stakeholder Expectations • Level of Organisational Support	• Organisational Culture • Sector / Profession Culture	• Societal (e.g. national) culture around WLB
Strategies	• Knowledge of negative impacts • Adjusting device notifications • Switching off • Separating work and home devices • Prioritisation strategies (e.g. notifications) • Passive Communication Strategies – • Email footers and out-of-office messages • Active Communication Strategies • Negotiation with line manager • Negotiation with stakeholders • Engaging in detachment activities • Predetermining personal rules around out of hours activity	• Knowledge of negative impacts • Role modelling of out of hours behaviour • Active discussions with teams about boundary management • Engaging in work-life balance supportive decision making and behaviour.	• Policies and guidance around out of hours expectations • Awareness raising of potential problems • Training for employees on strategies • Technostress inhibitors facilitating technological literacy providing technical support involving end users in the introduction / use of new technology	• Legislation and Codes of Practice

Table 8 – Influencers and strategies identified for mitigating negative impact of out of hours mobile ICT demands

4.5.1. Individual – Technological Boundary Management Strategies

The first set of individual strategies relate to practical aspects of the mobile technology; whether it is switched on, which notifications are active or silenced, and whether the technology serving work and home purposes is either combined or separated.

A number of the studies found that participants used practical, technology-based strategies for minimising the impact of out of hours disruption. These included simply turning off the phone, silencing notifications, using separate phones or accounts for work and home interruptions. The evidence in relation to these strategies showed differing practices and preferences between individuals, without clear and consistent findings of the relative benefit of turning off devices.

Park et al. (2020) found that teachers who kept work email alerts turned off on their mobile phones out of hours experienced fewer ICT demands (and, in turn, lower levels of weekly strain) on average across five weeks, compared with teachers who kept the alerts activated on their phones. They concluded from this that using the boundary management tactic of switching off in non-work time is more likely to minimise stress for teachers than attempting to adopt a model of work-home integration. Choroszewicz and Kay (2020) found that struggling segmentors in the legal profession (i.e. those who were trying to set clear boundaries between work and non-work, but were struggling to do so) needed to turn off mobile phones during certain periods (e.g. weekends with family) in order to maintain clear boundaries during these times. However, the success of this approach was variable, as was the willingness of struggling segmentors to actually switch off their mobile device. Their willingness to disconnect was often tempered by perceived out of hours availability expectations within the profession, and a discomfort with fully disconnecting from work if they felt there were internal or client communications that needed to be monitored.

Ciolfi and Lockley (2018) found that 96% of their participants had access to their work email on their personal mobile phone devices, and all had access to their work calendars. This indicated a practical, technological blurring of the work and home domains, and the researchers found that this flexibility gave participants a sense of reassurance, through ease of access to work-related commitments. However, Cousins and Robey (2015) found a desire amongst certain participants to have clear technology separation (i.e. separate work and personal devices) as a means of enabling effective boundary management. Such a clear separation strategy helped to simplify the different boundary rules applied for each device. However, they found that such a strategy was not suitable for all, identifying other users who used only one device. These users had separate work and personal email addresses and data, but the use of one device allowed the option to integrate personal and work data (e.g. calendar appointments) from different sources within the one device. Both Cousins

and Robey (2015) and Duxbury (2014) flagged that basic connection / disconnection rules were a key part of individual boundary management strategies, and that the success of these may require some negotiation with the employer.

The qualitative data collected by Schlachter (2017) showed that participants in their training intervention gave positive feedback about the inclusion of guidance around using do-not-disturb features and silencing push notifications on mobile devices. This suggested that the success of such technological strategies will depend on the level of awareness and training that employees have in using these features. It also shows that raising awareness of more advanced mobile technology functions (e.g. prioritising certain notifications etc.) may be important in bridging the gap between full out of hours availability and complete disconnection.

4.5.2. Individual - Prioritisation and Temporal Boundary Management Strategies

The next group of individual strategies related to prioritisation decision making, and the management of the temporal separation between work and home. Choroszewicz and Kay (2020) observed employees using strategies for workload prioritisation in minimising out of hours demands, when clear segmentation was not an option. For example, they cited junior lawyers, who had been given a clear expectation by their managers that they should remain contactable out of hours. This group chose to prioritise only emergency issues outside of working hours. As well as reducing out of hours disruption, such a strategy was used to implicitly manage expectations, and avoid clients becoming accustomed to receiving an immediate response regardless of the time of day or night.

The researchers also found *struggling segmentors,* who had decided to remain contactable during holidays, but only in urgent circumstances. Members of this group chose to turn off their own phone, but gave a domestic partner's contact number for use in the event of emergency. The intention of such a strategy was to send a clear message to colleagues that the justification threshold for contacting them was high. Cousins and Robey (2015) found that certain employees applied clear rules to determine whether to accept boundary permeations - e.g. having filters set up on phones to only allow notifications for certain callers, with unique ringtones for specific callers, and automatic routing to voicemail for others. Such a strategy enabled a more nuanced approach to boundary management, and reduced (without stopping) the number of out of hours demands.

Schlachter (2017) found that the proposal to set a fixed 'on-off' schedule for the hours of availability during the working week received mixed reactions. Some participants stated that having such clear boundaries led to them becoming more aware of their out of hours demands. However, others

found that such rigid boundaries were unrealistic, given the unpredictability of their work commitments. Duxbury et al. (2014) found that the segmentor group (who did not engage in using the device out of hours) tended to have clear and established rules for when and where they would use the device. Notably, members of this group had also previously used a clear segmentation strategy before adopting the mobile device, highlighting that segmentation preferences and resultant behaviour are likely to extend beyond the circumstances in which mobile technology is used.

4.5.3. Individual - Expectation Management / Communication Strategies

The research highlighted that out of hours demands are often motivated by the perceived or real expectations of others. Ciolfi and Lockley (2018) identified the importance of actively managing expectations of stakeholders in terms of email response times. They found that strategies being used included email footers (including messages intended to manage others' expectations on availability and response times), out-of-office messages and also proactive discussions with stakeholders about what degree of out of hours availability they can expect. In particular, the proactive management of expectations was important for those participants who were choosing to have more segmented approach to boundary management. This rests on the assumption that some clients / colleagues will implicitly expect out of hours availability unless this expectation is proactively managed. However, Ciolfi and Lockley's (2018) study did not extend to formal evaluation of the effectiveness of these strategies.

Park et al. (2020) found that communicative agreements made by individual teachers (i.e. agreements around when and how they can be contacted out of hours) had no effect on the level of ICT demands placed on them. The researchers provided a post-hoc explanation that such communicative tactics in themselves may be insufficient to minimise ICT demands. They hypothesised that boundary violations are likely to occur regardless of an individual's attempts to proactively manage expectations around out of hours availability, unless the agreement is legally binding.

Proactive expectation management can also be important for effective management of personal relationships outside of the workplace. Many studies (e.g. Adisa et al., 2017) have previously flagged the potential negative impact on out of hours work-related mobile ICT demands on relationships with family and friends. Cousins and Robey (2015) cited examples of certain employees reducing work-home conflict through negotiating with their domestic partner when and why they needed to be available out of hours. Ciolfi and Lockley (2018) provide examples of situations in which two

partners' boundary management strategies either aligned or differed from one another. Such instances led to either mutual understanding or relationship conflict, depending on the degree to which the partners' boundary management strategies were aligned with one another. Both of these studies highlighted individual cases from their sample, so further assessment would be required to determine the generalisability of these findings.

4.5.4. Individual - Activities Promoting Psychological Detachment

Barber et al. (2019) found that employees' level of **psychological detachment** moderates the negative relationship between workplace telepressure and satisfaction with work life balance. In this study, the researchers used the Sonnentag and Fritz (2007) scale to measure detachment. While this scale provides ratings of overarching strategies (e.g. "I distance myself from my work"), it provides less granular description of the specific cognitive or behavioural tactics that might be employed by the individual to achieve this outcome. Notably, the authors found that the other three forms of recovery in the Sonnentag and Fritz (2007) scale (relaxation, mastery and control) did not offer any explanation for the relationship between workplace telepressure and satisfaction with work life balance. They did find that three recovery experiences (detachment, relaxation and control) provided a link between workplace telepressure and work-family conflict, with telepressure consistently detracting from recovery experiences. Derks and Bakker (2014) found through their diary study that smartphone users who engaged in activities to psychologically detach experienced less work-home interference. Importantly, in a separate study, Derks et al. (2014) found that employees experiencing high levels of work-home interference through mobile technology were unable to engage with the recovery activities associated with psychological detachment. Pfaffinger et al. (2020) found that detachment mediates the effect of telepressure on well-being, and that high levels of telepressure were associated with low levels of detachment.

Linked to these findings, Eichberger, Derks and Zacher (2020) found that employees' psychological detachment after hours mediates the positive relationship between out of hours ICT demands and negative affect at bedtime. In effect, those participants who experience more out of hours demands are less likely to actively disengage from work-related issues, leading to lower mood at bedtime. The study's findings support the observations of Sonnentag (2018) – i.e. that in terms of psychological detachment, the negative associations with indications of poor well-being are stronger than the positive associations with indicators of positive well-being. They argued that this suggested detachment alone is not sufficient for supporting positive states. This is an important point when considering the relative balance of strategies that might be effective in counteracting the potential

negative impact of out of hours work related mobile technology demands. However, it does point to the conclusion that proactive strategies to both reduce the number of demands and also increase individuals' detachment are likely to improve individuals' affect.

Notably, all the above studies used also the Sonnentag and Fritz (2007) four item scale to measure detachment. As such, the methodology used did not capture more detail around the specific cognitive and behavioural strategies and activities that individuals were using to enable detachment from work-related issues out of hours, instead using more generic items such as "I distance myself from my work" – See Appendix A for more detail.

4.5.5. Individual - Training and Awareness around Boundary Management

Few of the studies evaluated the effectiveness of providing training to employees around strategies from managing the negative impact of out of hours mobile ICT demands. The exception was Schlachter (2017), who found only partial support for the positive impact of an online training intervention. Participants in the intervention group did demonstrate an increase in ICT-related self-control following the training. There was also a decrease in the need for recovery shown by participants in the intervention group. However, there was no evidence of increased levels of psychological detachment, satisfaction with work-life balance or well-being. It was notable that the sample within Schlachter's study was relatively small (n=55; with 19 in intervention group and 36 in control). As such, some caution is required in interpreting these findings. Participants stated that they valued guidance around implementing spatial boundaries, and felt that the modules would have benefitted from inclusion of relaxation exercises.

Park et al. (2020) noted the importance of raising employees' awareness of the potential negative impact of out of hours ICT use. They argued that both organisational leaders and unions have a role to play in this. They also proposed that such awareness raising for employees should be accompanied by a prescriptive set of technological boundary management strategies (e.g. deactivating email alerts while at home) rather than encouraging an integration approach to boundary management. While their research led to these recommendations, it did not formally assess the effectiveness of such interventions.

4.5.6. Individual - Attribution, Sense of Control and Cognitive Coping Strategies

An important aspect of the strategies studied has been the individual's cognitive frame of-reference around out of hours demands, as well as the cognitive coping strategies that they might use. Duxbury et al. (2014) noted that struggling segmentors tended to believe that the *employer* held responsibility for how the mobile device was used out of hours, meaning that these employees had little sense of control in terms of how they personally used their devices out of hours. Such perceptions will diminish employees' sense of agency over how their leisure time was being used, and the researchers found that this ultimately eroded employees' chances of success in implementing personal boundary management strategies. They concluded that a sense of personal agency and self-discipline was key to successful boundary management with mobile ICT devices. Their struggling segmentor participant group included 13 participants, and included individuals adopting Blackberry technology within a large pharmaceutical company. While the use of mobile technology has clearly evolved since this time, it is likely that the themes of agency and control will still be relevant. Those who were more successful in implementing personal boundary management strategies around ICT use were better at applying 'if-then' rules that were consistent with their beliefs on desired work-life boundaries, rather than reacting in an ad-hoc way to unpredictable work demands. They also found that successful implementation of strategies rested on advanced anticipation of external pressures (and putting pre-emptive rules in place to manage these), whereas struggling segmentors were unable to compartmentalise in this way. Gaudioso et al. (2015) also identified the importance of adaptive problem solving, which included proactive planning, seeking technical support where required etc. They found that such strategies, when applied in relation to out of hours ICT demands, reduced work exhaustion levels. Conversely, maladaptive coping strategies (e.g. disengagement and denial) increased exhaustion levels. Barber et al. (2019) found that perceived control over leisure time moderated the relationship between telepressure and global evaluations of work-life balance, again reinforcing the view that the degree of control the individual feels that they have over their personal life (and interruptions) will affect well-being outcomes.

However, not all the evidence is consistent. Eichberger et al. (2020) found that primary appraisal, self-efficacy, and social support did **not** influence the negative relationship between daily out of hours work demands and levels of detachment. In particular, they found no support for the moderating role of **appraisal** or **cognitive coping**. This is an important finding in considering the strategies that might be effective in mitigating negative impacts. The researchers explored primary appraisal (i.e. whether employees saw these demands as being harmful to their well-being) and secondary appraisal (the perceived availability of coping resources).

4.5.7. Leadership – Supportive Decision Making and Role Modelling

While much of the research focussed on the individual strategies that can help reduce the negative impact of out of hours mobile ICT demands, the role that leaders can play was also referenced within a number of the papers. The review highlighted the significant impact that leadership support for managing out of hours mobile ICT demands can have on wellbeing at an individual level. Park et al. (2020) found that school principals' work-family support behaviour had negative relationship with teachers' weekly out of hours ICT demands (and in turn their weekly reported strain). They also found that having a supervisor who is committed to supporting the family life of border crossing employees (i.e. those with integration behaviour) increased the employees' well-being, with employees experiencing greater levels of boundary control and lower levels of out of hours ICT demands. In effect, having a manager who is attentive to the employee's family life will result in greater levels of wellbeing within the employee.

There was also evidence of the impact on wellbeing outcomes when leadership support for maintenance of boundaries is not present. Duxbury et al. (2014) found that employees felt pressure from management to demonstrate out of hours availability once they had adopted a smartphone, particularly in situations when the manager was working out of hours, and employees felt pressurised to respond immediately to emails.

Choroszewicz and Kay (2020) flagged that the impact of leadership role modelling around out of hours ICT use has largely been ignored in past research. It was notable in this review that relatively few of the studies made direct reference to the specific strategies leaders can employ to minimise the negative impact of out of hours mobile ICT demands on employees. In their own study, Choroszewicz and Kay (2020) observed a tendency for lawyers who are senior in the profession to model integration behaviours. They proposed that this behaviour established expectations that only 'committed professionals' who demonstrate such boundary permeability would deserve promotion and career progression. This tended to advantage those who did not have significant caring responsibilities outside of work. They also found that junior employees' willingness to use practical individual boundary management tactics was, at times, undermined by the perception that such behaviour would result in their level of work commitment being questioned. This highlights that the relative success of any individual strategies is likely to be contingent on the level of leadership support the individual receives in applying these strategies.

4.5.8. Organisational – Cultural Expectations, Policy, and Practical Support

As might be expected, the demarcation between leadership and organisational interventions was not clearcut, given that the decisions made and behaviours demonstrated by leaders will set the tone and culture for the organisation. Cousins and Robey (2015) found employers often expected workers with mobile technology to be 'always available'. This was notable given that they were gathering data in 2004 and 2008, at a time when work-related mobile ICT usage was still undergoing widespread adoption. It suggests that managerial and cultural expectations around availability may change rapidly when new technologies are adopted. This is an important consideration for leaders to be aware of when new technology adopted by their organisation allows for greater out of hours availability. Their research also found that employees' attitudes varied significantly in terms of the extent to which they were willing simply to turn off or prioritise permeations.

Importantly, Barber et al. (2019) concluded that organisational interventions aimed at tackling telepressure would be better targeted at adjusting work design (to reduced levels of telepressure) rather than simply focussing on improving employee recovery. This was based on the findings that telepressure impaired employees' ability to recover effectively, meaning that if the telepressure remains, the improvement in recovery is likely to be limited. This reflects the conclusions of Choroszewicz and Kay (2020) – i.e. that individual boundary management strategies would be insufficient in themselves to minimise negative impacts, and that there was a need to modify organisations' norms and expectations around out of hours availability.

Park et al. (2020) flagged the importance of managing external stakeholders' expectations on out of hours availability, suggesting that in the context of education, school administrators should develop policies and programmes to reduce parents' expectations of out of hours availability (e.g. 'blackout' times after 6pm, or using parents' evenings to manage expectations). While this suggestion was not evaluated in their study, it was based on their findings that management of client expectations at an individual level had limited effectiveness.

Pfaffinger et al. (2020) studied the impact of organisations providing technostress inhibitors, which included facilitating technological literacy, providing technical support, and actively involving end users in the introduction and use of new technology in the organisation. They found that technostress inhibitors such as these moderated the effect of technostress creators on wellbeing, and also buffered the negative effects of technostress creators on detachment. As such, the evidence suggests that these practical support steps, when provided by organisations, will offer an important means of mitigating the potential negative impact of out of hours mobile ICT demands.

4.5.9. Societal – Cultural Norms

Notably, Choroszewicz and Kay (2020) observed some national cultural differences affecting behaviours, with Finnish lawyers having clearer self-imposed rules about not checking work phones after work hours, whereas Canadian lawyers tending to continue to read work emails throughout the evening. This may point to broader macro-cultural implications around prevailing norms on a national basis influencing the relative success of strategies used at an individual and organisational level.

4.6. Sub Question 1 – What are the negative impacts that interventions and strategies are seeking to mitigate / reduce?

The study also sought to identify the negative impact that the interventions and strategies were seeking to mitigate. From the papers reviewed, the negative impacts reported are summarised in Table 9.

Study	**Impact:**
Barber at al. (2020)	Reduced work life balance Reduced psychological detachment Reduced relaxation
Choroszewicz and Kay (2020)	Increased stress Increased work home interference
Derks and Bakker (2014)	Increased work home interference Increased state level burnout
Duxbury et al. (2014)	Increased work home interference Increased compulsion to check phone
Eichberger et al. (2020)	Negative effect at bedtime
Gaudioso et al. (2017)	Work family conflict Distress
Park et al. (2020)	Increased negative affect Reduced sleep quality
Pfaffinger et al. (2020)	Increased stress Reduced sleep quality
Schlachter (2017)	Reduced recovery Reduced affective wellbeing at bedtime

Table 9 – Reported Negative Impacts of out of hours Mobile ICT demands

The majority of the papers reviewed made some reference to the potential negative impact of out of hours work-related mobile ICT demands. Barber et al. (2020) found that workplace telepressure had a significant negative relationship with satisfaction with work-life balance, psychological detachment, and relaxation experiences. Park et al. (2020) found that within a teaching environment, greater expectations from parents for out of hours communication led to greater out of hours ICT demands and reduced levels of boundary control for teachers. They also found that these ICT demands were positively related to work rumination, negative affect and insomnia. Derks and Bakker (2014) found that intensive smartphone use was positively related to work-home interference and state level burnout, although this relationship with work-home interference was not replicated by Derks et al. (2014). Duxbury et al. (2014) found that the majority of participants in their research were 'struggling segmentors', who succumbed to pressure from their organisation to be available out of hours, regardless of their intentions around boundary management. Eichberger et al. (2020) found a positive association between out of hours ICT-based work and daily negative effect at bedtime. Choroszewicz and Kay (2020) noted that interviewees' engagement with mobile technology was largely reactive, and interruptions caused by technology extended their work into evenings, nights weekends and holidays. Pfaffinger et al. (2020) found that ICT demands had a negative effect on several wellbeing indicators.

4.7. Sub Question 2 - Factors influencing the success of interventions / strategies

A range of the factors identified by the studies as influencing the relative success of the strategies and interventions have already been described, and are summarised in Table 8 at the individual, leader, organisational and societal levels. These include individuals' personal sense of agency, leadership support, practical organisational assistance (e.g. familiarisation with technology), and the level of out of hours response expectations of others (e.g. clients). This section provides further analysis of the additional influencing factors identified within the studies.

4.7.1. Importance of Individualisation of Strategies

The review highlighted marked inter-personal differences in choosing and implementing strategies. For example, the different groups identified by Duxbury et al. (2014) (segmentor, integrator, struggling segmentor, and struggling integrator) flagged the influence of individuals' personal circumstances and natural preferences in terms of the strategies they adopt. This highlighted that a 'one-size-fits-all' set of strategies is unlikely to be effective, and that individualisation of strategies

(based on individual job requirements and personal preferences) will be critical to the success of the strategies. Ciolfi and Lockley (2018) interviewed 26 participants from varied organisational backgrounds, and found that their mobile ICT boundary management strategies ranged from strict segmentation through to dissolving almost all boundaries between work and non-work. It was notable that only one of their 28 participants chose to adopt a complete separation of work and non-work activities.

4.7.2. Autonomous vs Mandatory Out of Hours Activity

Some researchers (e.g. Park et al., 2020, Schlachter, 2017) flagged the distinction between voluntary after hours work (i.e. that which the employee chooses to do) and obligatory after hours work (i.e. that which represents a clear, contracted demand from the employer - e.g. on-call arrangements). Park et al. (2020) specifically avoided voluntary aspects of ICT work (defining teachers' out of hours communication with parents as a requirement of the role). Conversely, Schlachter (2017) studied only voluntary out of hours ICT activity, to draw the clear distinction that the ICT demands were not part of a formal contracted arrangement.

Other researchers did not make this distinction, with some arguing that there is unlikely to be a clear-cut distinction between autonomous and mandatory activity. Barber et al. (2019) cited the personal allocation framework (Grawitch et al., 2010) in arguing that the *feeling of pressure* to respond is non-autonomous – in effect, blurring the boundaries between activity which is clearly mandated, and activity which is considered entirely voluntary. This links to employees' attribution and sense of control which is covered in the earlier sections.

4.8. Quality Assessment

The full results of the quality assessment can be found in Appendix B (both quantitative and qualitative assessments). The assessment of the evidence statements is shown below in in Table 10.

Evidence Statement	Quality Evaluation	Justification
There are clearly identified potential **negative effects** for individuals resulting from out of hours mobile ICT demands.	Promising Evidence	There are a number of studies showing consistent findings about the impact of out of hours mobile ICT demands on wellbeing, detachment etc, albeit individual and contextual variations require further research.
There are recognised strategies / interventions being used by individuals / managers / organisations for minimising the potential negative effects of sustained out of hours mobile ICT demands	Initial Evidence	The studies give some insight into the strategies being used at each level. The research largely focussed on individual strategies at employee / manager level, rather than broader interventions. There were some limitations in the design and execution of studies, and in terms of the clarity of description / definition of the strategies.
There are **individual** strategies / interventions that are effective in minimising the potential negative effects of sustained out of hours mobile ICT demands	Initial Evidence	Limitations in the design and execution of studies, limitations in the clarity of description / definition of strategies / interventions, and limitations in the degree of qualitative evaluation of the effectiveness of the strategies / interventions.
There are **managerial** strategies / interventions that are effective in minimising the potential negative effects of sustained out of hours mobile ICT demands.	Initial Evidence	Limitations in the design and execution of studies, limitations in the clarity of description / definition of strategies / interventions and limitations in the degree of qualitative evaluation of the effectiveness of the strategies / interventions.
There are **organisational** strategies / interventions that are effective in minimising the potential negative effects of sustained out of hours mobile ICT demands.	Initial Evidence	Limitations in the design and execution of studies, limitations in the clarity of description / definition of strategies / interventions and limitations in the degree of qualitative evaluation of the effectiveness of the strategies / interventions.
There are clearly identified factors that facilitate / detract from the **success** of these strategies / interventions.	Promising Evidence	There is some evidence of factors at individual and organisational level. There is some systematic evaluation of the impact of these factors, although in many studies their evaluation is relatively informal and unstructured.

Table 10 – Evidence Statements and Quality Ratings

5. Discussion

5.1. Overview

The purpose of this systematic literature review was to identify which interventions and strategies are effective for managing the negative impact of out of hours work-related mobile ICT demands. The review also intended to explore the negative impacts that these interventions and strategies were seeking to mitigate, and the factors which influence the relative success of the interventions and strategies.

The review provides a summary of the strategies from past research at individual, leadership, organisational and societal levels. It has assessed the extent to which there has been systematic evaluation of these strategies, and also the extent to which they have been considered as part of a coherent package of measures that account for the differing individual and organisational factors.

The overarching picture is one of an emerging evidence base. A broad range of strategies were described, which operated at individual, leader, organisational and societal levels. The clarity around the definition and description of these strategies was mixed. Some technological strategies (e.g. around switching off mobile devices) were clearcut and not subject to interpretation. Strategies which referred to cognitive processes or states (e.g. detachment) were often described in broad terms, without detailed exploration of the practical steps taken by the individual to achieve the outcome. Such explanation was not necessarily a direct research aim of the studies reviewed. However, its absence does limit the degree to which clear, practical conclusions can be drawn in terms of applying these strategies in future interventions.

More broadly, the research generally supported the findings reported elsewhere of the negative impact that sustained out of hours work-related mobile ICT demands can have on individual wellbeing. The research also supported the assertion (e.g. Schlachter et al., 2017) that the effects of out of hours ICT demands are complex, and will dependent on a range of individual and contextual factors.

5.2. The Interplay between the Individual and their Environment

The individual strategies described ranged from simple, practical steps, to more complex cognitive reframing around individuals' personal sense of agency and control. There are clearly some basic, practical steps that individuals can take to minimise the level of out of hours disturbances. However, the practical success of these will rest on the degree of permission (explicit or implicit) and active

support that the employee feels that they have from their manager or organisation to disconnect. There will be factors at team, organisational, sector and societal levels which will influence the relative level of support an individual can expect. For example, Choroszewicz and Kay (2020) observed that a member of the legal profession attempting to take unilateral action to manage boundaries may experience tension and limited benefits if they are fighting against a prevailing industry culture. This is consistent with the conclusions of Park et al. (2020) about the critical role of the broader support provided to the individual. Barber et al. (2019) flagged the need for more systemic changes around the out of hours expectations (rather than solely giving employees tools aimed at facilitating their recovery). They pointed towards previous work by Kossek et al. (2014), which had shown the effectiveness of providing training to supervisors in family-supportive behaviours. The intention of this would be to create greater dialogue between manager and employee about out of hours expectations, and a greater level of support for the employee to negotiate boundary management rules. Likewise, Choroszewicz and Kay (2020) made the clear recommendation that law firms should be more proactive in establishing formal rules and expectations around out of hours availability through mobile ICT.

It was of note that while the papers referred to strategies at individual, leader, organisational and societal levels, they did not necessarily offer a clear account of how the strategies and interventions at these different levels could be co-ordinated and combined. This is an important area for further focus in future research.

5.3. The conceptualisation of a 'strategy'

The extent to which detachment and recovery activities are a proactive choice or strategy is an important consideration in evaluating the research. A number of the papers (e.g. Barber et al., 2019; Derks & Bakker, 2014; Derks et al., 2014; Pfaffinger et al., 2020; Eichberger et al., 2020) found that detachment could help to minimise negative the impact of out of hours mobile ICT demands. This means that if an individual is able to engage with detachment activities as a proactive, self-guided choice, then this will tend to have a positive impact on their wellbeing. However, the causality and degree of personal agency here is an important consideration, alongside the degree to which the prevailing culture and workplace expectations allow for detachment to be achieved. All of these studies used the four item Sonnentag and Fritz (2007) scale for measuring detachment. These items vary between those which could be considered an active strategy "I distance myself from my work", to those which relate more to environmental factors "I get a break from the demands of work", and those which represent the capacity to cognitively disengage from work "I don't think about work at

all" and "I forget about work". As such, while it is reasonable to conclude that there is evidence to support the idea that proactive detachment strategies are likely to be beneficial for the employee, these are likely to reflect a complex set of behavioural and cognitive approaches. These could require prior training and practice on the part of the employee, particularly when considering the growing evidence base to support the concept of smartphone addiction. In this regard, it is important that future intervention studies draw on the broader evidence base around practical approaches and interventions for facilitating detachment (e.g. the intervention study by Althammer et al., 2021, exploring the effect of a mindfulness intervention on detachment).

5.4. The Relative Effectiveness of the Strategies & Interventions Observed

The level of formal evaluation of the strategies and interventions described was limited in many of the papers due to the cross-sectional nature of the research. The qualitative observations around how effective individuals found different strategies provide valuable initial signposts, but it is important that these are supplemented in due course with more formal evaluation. The work of Schlachter (2017) included an intervention study which points the way for future research, and it is positive that the number of systematic intervention studies in closely related areas has been growing (e.g. Russell et al., 2021). As a note of caution, the evaluation of relative effectiveness of different strategies becomes more challenging, as more complex combinations of individual, leader and organisational strategies are considered. What constitutes an effective combination will vary from person to person, adding further complexity to any evaluation. As such, while the review found limitations in the extent to which there had been systematic evaluation of the strategies described, it is also recognised that two key factors present significant methodological challenges in disaggregating the respective contributions of different strategies. Firstly, the need for individualised combinations of strategies, and, secondly, the interplay of individual, leader, organisational and societal factors.

5.5. Methodological Limitations of Studies Reviewed

The studies included both quantitative and qualitative approaches. The quantitative studies generally had the advantage of including broader samples, although often lacked granular detail about the specific strategies that were being employed by individuals. The qualitative studies offered personal insights from participants, but at times the different studies showed conflicting findings (e.g. around the relative benefits of 'switching off'), which raises questions about their

generalisability. Fundamentally, the majority of studies were cross-sectional, with few studies taking a structured intervention approach to evaluating the efficacy of the strategies and interventions. Inevitably, this limits the confidence which can be placed in the current evidence base. There have been relatively few opportunities to objectively assess the causal effects of an intervention approach on outcome variables such a work-life balance, wellbeing etc. Many of the studies cited have acknowledged this limitation in methodology, and have flagged the need for future intervention research to better understand the impact of different interventions and strategies at the individual, group, leader and organisational levels. For example, Barber et al. (2019) flagged that their research may not have been sensitive enough to full assess the dynamic differences in recovery and wellbeing relationships, and that observed relationships could be bi-directional (e.g. someone with low satisfaction with work-life balance could be more susceptible to telepressure).

Derks et al. (2014) also recognised the limitations arising from a lack of random assignment to 'smartphone' user conditions, with those choosing to adopt the technology potentially representing a biased sample of the broader employee population. Derks and Bakker (2014) acknowledged the risk of treating smartphone use as a trait-like behaviour, whereas in reality it may well fluctuate significantly over time for individuals depending on demands. As some of the studies relied on a 'snapshot' one-time self-report measure of smartphone use, this may mask some of the intrapersonal variation that is likely to occur over time in terms of engagement with mobile technologies.

Some of the studies were limited by the sample sizes employed. Schlachter (2017) experienced significant drop-out rates, meaning that was only possible to include 19 participants in her experimental group. Duxbury et al. (2014) recognised that there were limits around the generalizability of their findings. For example, all of the segmentor group were women, whereas all integrators were older men / women. While Derks et al. (2014) was one of the few studies to use a control group, they acknowledged that the control group was likely to be more homogeneous than the experimental group, due to the control group being primarily sourced from one organisation.

Few of the studies started at the point of zero use of mobile technology / smartphones. As flagged by Derks and Bakker (2014), using a longitudinal experimental design with zero-history groups in smartphone use would give far greater insight into the impact of smartphone use. The exception on this point was Duxbury et al. (2014), who did explore employee behaviour from the point of technology adoption in 2007-2008. While further research of this type would be beneficial, the current prevalence of technology means that it is likely to be unrealistic to find sufficient employee samples who have yet to adopt some form of mobile technology in the workplace.

5.6. Measurement Limitations

Full details of the measures used in the research can be found in Appendix A. Many of the studies are reliant on self-report measures, which resulted in a number of limitations. Firstly, the degree of mobile demands experienced by the individual has been primarily captured through self-report measures (i.e. personal perception) rather than an objective metrics around the actual time committed, number of communications handled etc. As Eichberger et al. (2020) observed, such objective data is now relatively easily captured through monitoring apps etc., and future research would benefit from including such objective measures. Similarly, metrics around detachment were self-reported, and did not capture objective data around periods of time spend engaged in non-work activities, which would help substantiate the findings.

In addition to this. relatively short measures have been used (3-4 items) for the majority of constructs measured. While the Cronbach's alpha coefficients reported were generally good, the brevity of these measures inevitably means that they offer a relatively broad brush assessment of concepts such as detachment. The use of the alpha coefficient as the primary *de facto* measure of scale quality is questionable, and only gives limited insight into the true validity of a scale as a conceptually legitimate, stand-along measure of the construct in question. As Taber (2018) observed, researchers often do not provide justification for the use of the alpha coefficient as a quality hallmark for scales, and instances can arise when scales with 'acceptable' alpha coefficients have acknowledged validity problems.

Finally, Eichberger et al. (2020) highlighted the importance of future research exploring additional moderators (e.g. exploring which factors besides detachment can facilitate positive wellbeing states).

5.7. Currency of Findings

Given recent advances in technology and changes in its use in the workplace, it is notable that some of the studies (e.g. Cousins & Robey, 2015, Duxbury et al., 2014) collected data over a decade ago (the data for both studies was collected between 2004 and 2008). The rapid expansion on smartphone usage over this period (e.g. Deloitte, 2019) means that employee experiences of out of hours demands are likely to have shifted significantly during this time, and therefore a degree caution need to be taken in assessing the current validity of some of these findings. Moreover, the significant shifts to working practices that have arisen as a result of the COVID pandemic also mean that the workplace norms and expectations will have changed since these studies were conducted.

5.8. Limitations of this SLR

The current review has intentionally focussed specifically on out of hours demands arising from mobile technology. There is clear overlap with a number of broader topic areas. For example, broader research around boundary management strategies, detachment, email management, wellbeing initiatives will all interlink with the topic under exploration. As such, research from these fields will also play a role in the progressing future knowledge and practice in the broader area of work-life balance.

The study has had a relatively specific focus, around the use of mobile technologies. It is acknowledged that there is a broader evidence base around systemic aspects of modern-day working life. These include interventions to change email habits (e.g. Russell et al., 2021), work-family interventions around boundary setting (e.g. Crain et al., 2019). While these studies do not make specific reference to mobile technology, they nonetheless have a close inter-relatedness with the subject being reviewed.

For this research, grey literature was excluded from the review. This approach was taken in part due to time constraints, and also to ensure that the review primarily focused on peer-review journals with research that had been critically evaluated in terms of methodology. However, it is also recognised that a range of organisational initiatives are being reported in the grey literature. Given the gaps identified within the current evidence base, any practical interventions being designed for organisations would benefit from referencing the practices that have been used elsewhere. Even if these lack rigorous empirical design and evaluation, they may help stimulate further thinking amongst practitioners trying to address the need for coherent approach to tackling these challenges.

5.9. Implications for Future Research

Firstly, there is a need for clearer description and definition of the interventions and strategies available. Given that these will need to be tailored according to the needs of the individual, it would be beneficial for the range of strategies and tools are consolidated into a single 'library'. The evidence around the potential negative impacts shows a need for evidence-based resources to be made available to organisations; both to raise awareness of the potential harm arising from out of hours mobile ICT demands, and to provide strategies for how to mitigate these.

It is also important that future research includes more structured intervention studies to provide clearer evidence around causality, and effectiveness of different combinations of strategies. In particular, future research should focus on interventions (e.g. training, coaching etc.) which support

individuals and managers in developing effective strategies for minimising the negative impact of out of hours mobile ICT demands. As many of the studies focussed upon strategies at an individual level, it is important that there is ongoing attention given to strategies and interventions at a leadership, organisational and societal level.

The fluid nature of boundary management and detachment also needs to be considered. Eichberger et al. (2020) flagged the importance of future research measuring demands and detachment at multiple times during the evening, to get a better understanding of temporal and causal order of variables.

It is also important that ongoing developments in technology are taken into account. Cousins and Robey (2015) describe a hierarchical form of boundary management, through the use of different notification settings for different contacts bridges the gap between total disconnection (and the potential anxiety this may bring in some employees) and receiving all messages. This is an important aspect of technological strategies which has yet to be explored fully. The increasing range of platforms now used for organisational communication has rendered boundary management more complex, and the expectations and boundary management implications of each of these (and how they interact) will need to be explored further. A recent example of this is the study by Mols and Pridmore (2021) into boundary negotiations around work-related use of the WhatsApp platform.

Future evaluations will need to account for the complex systems in which this work is being conducted. The generalisability of findings will be contingent on the extent to which researchers have accounted for factors such as the level of leadership support, and the culture within the organisation and sector being explored.

5.10. Implications for Future Practice

Future organisational practice will need to focus on awareness raising, to ensure that individuals and leaders have a better understanding of the potential harms of out of hours mobile ICT demands, and also the strategies which might be available for them. This might be included during organisational induction programmes or delivered through specific training. Senior leaders and HR will also need to send a clear message that managers have a responsibility to proactively support employees in maintaining boundaries that support their long-term wellbeing. This may require leaders to have difficult conversations with external clients in order to manage expectations around out of hours availability. It will also require leaders to proactively role model boundary setting behaviour, and ensuring that they are not (intentionally or inadvertently) creating further out of hours demands for

employees through their own behaviour. Organisations will need to ensure that their corporate mobile technology settings are sufficiently flexible to enable employees to adapt notifications to suit their own boundary management preferences. On a broader scale, leaders will benefit from assessing the extent to which their own organisational culture supports or hinders employees in proactively managing their level of out of hours mobile ICT demands. Formalised organisational policy may go some way in supporting this. However, there will need to be a recognition that a 'one-size-fits-all' approach to boundary management will not account for the nuanced relationship between the range of factors identified at the individual, leadership, organisational and societal levels.

6. Conclusions

The role of mobile technology in the workplace has evolved extensively over the past decade. While this has been transformative for many employees' work lives, the flexibility afforded by mobile technology can also bring significant costs. The availability of effective, evidence-based strategies for managing potential negative effects will be of increasing importance to individuals and organisations as they continue to expand the potential of mobile working. The evidence from this review has identified a range of strategies that are employed at individual, leader, organisation and societal levels. The evidence around the effectiveness of these strategies, particularly when used in combination, is still nascent. Future research on cataloguing and formally testing these strategies will play an important role in protecting employee's wellbeing in an increasingly digital, mobile workplace.

Chapter 4: Study 2 - Empirical Study

Title: **Co-design and feasibility testing of a toolkit for mitigating the negative impact of out of hours mobile ICT demands.**

Abstract

Out of hours work-related demands resulting from mobile technology have received significant attention in recent years. There is an increasing body of evidence showing the potential negative impacts that individuals can experience. However, there has been far less systematic research into strategies and interventions to alleviate these effects. The purpose of this study was firstly to develop a co-designed prototype toolkit for individuals and organisations to mitigate negative effects, drawing on an established approach for intervention development (Leask et al., 2019), and informed by behavioural change principles (e.g. Minchie et al, 2011). Secondly, the study tested the feasibility of using this toolkit in organisational contexts through consultation. A total of 24 participants, primarily knowledge workers from a range of sectors and industries, took part in the co-design process which comprised focus groups and interviews at two time points. Reflexive thematic analysis identified eight themes important to mitigating the impact of out of hours demands. The design of the prototype toolkit was an iterative process, which drew on the findings of the previous systematic literature review (Eyre et al., in preparation) and themes identified through the focus groups findings. The resultant toolkit content included factsheets, short questionnaires and exercises, designed to facilitate reflection and behavioural change at both individual and leadership level. These components were formed into resource packs and separate workbooks for both individuals and managers / Human Resources (HR) professionals. The feasibility of the prototype toolkit was assessed by the co-design group at Time 2. The findings showed support for the toolkit, and participants believed that it could play an important role in awareness raising and facilitating behavioural change. The prototype was also presented to an independent research consortium for review. Participants provided a number of recommendations for future enhancements, as well as identifying facilitators and barriers for successful implementation. Limitations to the concept are also considered.

1. Introduction

1.1. Overview

The rapid increase in the use of mobile technology for work over the past two decades has led to significant changes in the boundaries between home and work. It has increased the flexibility with which employees can approach their work, and offers the opportunity for immediate engagement with work-related activities at any time and location. Such opportunities have benefits in terms of the level of responsiveness employees can offer, as well as the level of flexibility it gives employees in managing their workload around other life commitments. However, there is increasing evidence that this flexibility comes at a cost, with increased, often unwelcome demands being placed on employees beyond their recognised working hours. This links to the concept of telepressure, which Barber and Santuzzi (2015) define as the compulsive pressure or urge to respond to work-related messages. Telepressure has been found to be linked to individuals experiencing difficulty in psychologically detaching from work (e.g. Barber et al., 2019).

1.2. The Negative Impact of Out of Hours Mobile ICT Demands

There is growing evidence of the negative effects of sustained out of hours mobile ICT demands. These include work to home conflict (Gadeyne, 2018), work-related exhaustion (Derks et al., 2014), negative effect on family relationships and general health and wellbeing, (Adisa et al., 2017), negative effect on detachment (Cambier et al., 2017), negative rumination, negative affect, insomnia (Park et al., 2020), and burnout (physical and cognitive), absenteeism and poor sleep quality (Barber et al., 2014). These potential outcomes will vary between individuals, and will be influenced by factors such as individual segmentation preference - i.e. the degree to which an individual prefers to have clear boundaries between home and work (segmentation) versus individuals preferring to blur this boundaries (integration) (Kreiner, 2006). Findings around the negative impact of out of hours mobile ICT demands have been observed across a range of sectors, using diary studies, surveys, and semi-structured interviews. While there is now considerable evidence around the potential risk of negative outcomes, it is also clear from the research that these effects are influenced by a complex interaction between the individual's working style and preferences, the frequency and type of out of hours demands that they face, and the degree to which their organisation provides support mechanisms or buffers.

1.3. Strategies Proposed for Mitigating Negative Impacts

Eyre et al. (in preparation) conducted a systematic literature review of strategies for mitigating the negative impacts of out of hours mobile ICT demands. This review found that researchers studying the potential harm caused by out of hours mobile ICT demands have recommended a range of strategies. However, the SLR showed that there has been limited systematic evaluation to date of the effectiveness of these strategies. The SLR also highlighted the absence of a consolidated 'library' of strategies. The strategies proposed, and the extent to which they have been empirically tested, are shown below in Table 11.

Strategy	Recommended by	Empirically tested
Increasing shared awareness of the risks	(Cambier, 2019; Van Laethem,2018).	No
Practical steps to minimise the risk of out of hours disturbance (e.g. changing inbox alert settings)	(Cambier, 2019).	No
Emphasising positive feedback and goal progress within out of hours communication.	(Butts et al., 2015).	Partially[1]
Supervisors / organisations setting clear guidelines / policy about out of hours availability expectations	(Derks et al., 2015; Adisa et al.,2017; Choroszewicz & Kay, 2020; Barber and Santuzzi,2014; Cambier 2019).	No
Negotiating tailored agreements between organisations and individuals	(Barber & Santuzzi, 2015; Ohly, 2014; Kossek & Lautsch, 2012; Kossek et al. 2014).	No
Adapting job design to avoid excessive out of hours demands	(Gadeyne et al., 2018; Barber et al., 2019).	No
Offering employees training in recovery activities / detachment strategies	(Ohly & Latour, 2014; Cambier, 2019; Schlachter, 2017)	Yes (Schlachter, 2017)
Training employers in family supportive supervision behaviours	(Barber et al., 2019)	No

Table 11 – Previously recommended strategies for mitigating negative effects of out of hours mobile ICT demands, and empirical testing.

The complex interaction between the individual, their environment and the demands experienced means that the empirical evaluation of single strategies in isolation is unlikely to provide significant progress towards offering a sufficiently holistic solution.

[1] Butts et al (2015) showed through hierarchical linear regression analysis that the affective tone of out of hours communications used by supervisors influenced employees' levels of anger and happiness.

Past research has shown significant individual variation in terms of perceived telepressure (Barber et al., 2019), boundary management preferences (Kreiner et al., 2009), and the level of support provided by leaders in helping employees to manage boundaries (Park et al., 2020). This flags the necessity of having individualised combinations of strategies (Duxbury et al.,2014), adapted to suit the individual's unique personal circumstances and boundary management preferences (i.e. the strategies and tactics used by individuals to establish, maintain and adapt the boundaries between they use to adapt the boundaries between work and home – Nippert-Eng, 1996). Indeed, Gadeyne et al. (2018) and Adisa et al. (2017) found that an individual's approach to boundary management (whether integration or segmentation) can affect their relationship with mobile technology, and the extent to which they perceive it as being either a benefit or an intrusion.

1.4. Models of Behavioural Change

Addressing the challenges of out of hours mobile ICT demands is likely to require changes in the thinking, behaviour and working practices of those involved, including employees, managers, and external stakeholders. A number of frameworks have been developed to support initiatives that seek to change behaviour across a population (summarised in Osman et al., 2020). For example, the Behavioural Change Wheel model (Michie et al., 2011) provides a framework through which behaviour, intervention functions, and policy categories can all be considered in terms of their impact on behavioural change outcomes. The use of the Behavioural Change Wheel to inform interventions has been found through randomised control trials to facilitate greater changes to behaviour than initiatives which have not been informed by the model (Kolodko et al., 2021). This allows those undertaking behavioural change interventions to consider relevant success factors at three levels; the behaviour itself, the characteristics of the intervention, and the policy needed to support the intervention.

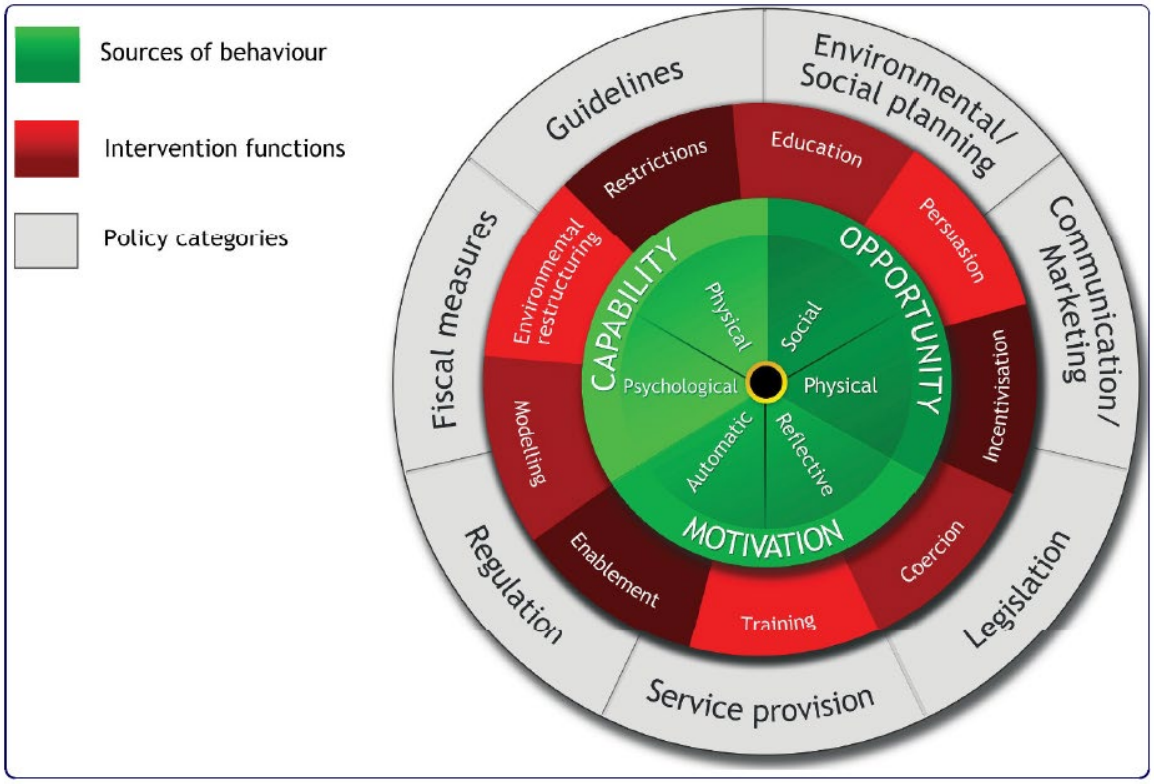

Figure 2 – The Behavioural Change Wheel (reproduced from Michie et al., 2011)

There has also been a range of research around the factors that can lead to resistance to change on a multilevel basis within organisations (e.g. Sverdlik & Oreg, 2022). As such, simply raising awareness about potentially harmful effects of out of hours mobile ICT demands is unlikely to be sufficient to facilitate any meaningful behavioural change in individuals and leaders. This is likely to require a broader change initiative, taking into account the range of behavioural change facilitators and barriers identified by Michie et al. (2011).

More specifically, Russell et al. (2021) found the Work-habits Intervention Model (WhIM) to be effective as an intervention in changing long term work-related email habits for those with higher levels of self-efficacy. This required participants to engage with a rationalised plan for behavioural change (i.e. clearly understanding why the change of habit is important, and making a clear commitment to use the plan generated). In their study, Russell et al. (2021) measured work habit change in terms of defined outcomes – i.e. a resultant improvement in goal attainment and wellbeing. The WhIM is based around the instigation-execution model of habit change proposed by Gardener et al. (2016). This is based upon the principle that an effective intervention will need to change the individual's *intention* to act. The strongest predictor of behavioural change has been found to be individuals *developing new intentions* in relation to the habit in question (Gardener et al, 2016).

1.5. The present study

There are notable gaps in our understanding of strategies and interventions for managing the negative effective of out of hours mobile ICT demands. Firstly, there have been relatively few systematically designed intervention studies that have rigorously tested these strategies in terms of effectiveness in mitigating negative impacts of out of hours mobile ICT demands (Eyre et al., in preparation). Secondly, there has been little research evaluating the outcomes of using the strategies in different combinations, in order to account for variations in individual boundary management preferences, work contexts and organisational culture. Thirdly, Eyre et al. (in preparation) highlighted the absence of a coherent lexicon or resource kit which brings together the different strategies. Such a resource would support individuals and organisations in adapting local interventions to suit individual needs and specific organisational circumstances. This study aims to contribute to our understanding by developing and examining the feasibility of a toolkit to minimise the negative impact of out of hours mobile ICT demands.

The study used a co-design approach which has been successfully applied to provide practical resources to end-users in a number of professional contexts. These have included exercise therapy for cancer survivors (Dennett et al., 2022), health and wellbeing for patients with neurological conditions (Mudge et al., 2020); (Sezier et al., 2018), and literacy and language skills for vulnerable migrant students (Smith et al., 2021). These toolkits include a range of interactive resources designed to support individuals and professionals in areas of learning and behavioural change. In the context of managing out of hours mobile ICT demands, where there are a broad range of possible strategies and individualisation is important, a toolkit approach offers the potential for employees, leaders and HR professionals to access a selected set of resources and exercises, designed to stimulate learning, self-awareness and behavioural change in the area of out of hours mobile activity.

Therefore, the first aim of this research was to co-design a prototype toolkit designed to provide resources to support individuals, leaders and organisations in mitigating the negative impact of out of hours mobile ICT demands. The second aim of the research was to assess the feasibility of implementing such a toolkit in organisational contexts. It is recognised that the effectiveness of many toolkits and organisational interventions has been limited due to a lack of structure in their implementation, or a lack of understanding around potential barriers to their successful adoption and use (Yamada et al., 2017). The research aimed to identify potential success factors and barriers, in order to maximise the chance of effective implementation of the toolkit in the future. The design and feasibility assessment stages included here represent the first stages of evaluating a complex intervention (Skivington et al., 2021).

1.6. Study Aims and Objectives

The aim of the study was:

- To assess the feasibility of a co-designed toolkit for managing the negative impact of out of hours work-related mobile ICT demands.

The main research question for the study was:

- What is the feasibility of a co-designed toolkit for managing the negative impact of out of hours work-related mobile ICT demands, and which strategies and interventions are considered to have sufficient utility to warrant inclusion in the toolkit?

The sub-questions the study aimed to also answer were:

- To what extent will such a toolkit be viewed as a beneficial resource for both employees, managers and HR practitioners?
- What content should be included within a toolkit, and how should it be structured to maximise usability?
- What individual and organisational factors are likely to facilitate / detract from the effectiveness of the toolkit?

2. Methodology

This study adopted a **co-design** approach to developing an intervention (i.e. a research method that combines generative and exploratory research with developmental design - Sanders & Stappers, 2008; Leask et al., 2019). The methodology has previously been applied in developing a range of interventions (including toolkit design) by Blake et al. (2022), Dennett et al. (2022), Mudge et al. (2020), Smith et al. (2022) and Ward et al. (2018).

2.1. Intervention Co-Design Approach

The principle of co-design (also referred to as co-creation and participative design) has gained increasing recognition as an effective means of maximising the success of an intervention, through involving end users throughout the design process. It has been defined as a research method that combines generative and exploratory research with developmental design (Sanders & Stappers, 2016; Leask et al., 2019). The approach has been commonly used in healthcare settings (e.g. Ward et al., 2018; Slattery et al., 2020). In the context of this research, it provides a methodology through which end users can actively participate throughout the design of the toolkit, guiding the format and content, in order to maximise the usability and relevance of the end product. Evidence to date from the public health sector (cited in Leask et al., 2019) has demonstrated that co-design approaches can help ensure that initiatives are more effective (Durand et al., 2014), can lead to greater patient / end user satisfaction (Martin et al., 2005), and can result in higher quality, more effective interventions (Crawford et al., 2002).

Co-design is not without challenges – Green et al. (1996) highlighted the tensions the researcher conducting co-design can experience between satisfying the requirements of end users, whilst at the same time satisfying academic requirements and conventions. Greenhalgh et al. (2016) conducted a narrative review of co-design applications and found key success principles. Firstly, a systems perspective should be adopted – i.e. recognising that there are multiple interacting entities, and outcomes cannot be predicted in advance. Secondly, the research should be framed as a creative enterprise, focused on human experience, and therefore the outcomes will become clearer as the co-design process progresses. Finally, an emphasis should be placed on process – i.e. how the toolkit is framed, as well as the governance and facilitation arrangements for the co-design process.

As discussed, many recent toolkit design initiatives have successfully used the co-design methodology (Dennett et al., 2022; Mudge et al., 2020; Smith et al., 2021), harnessing the experience of practitioners and subject matter experts to guide the design of the toolkit content and

format. The application of co-design methodology for the current research was structured around the PRODUCES framework for co-creation (proposed by Leask et al., 2019). This model was used to guide the structure and sequencing of the co-design stages, alongside the required procedural components laid out by Leask et al. (2019).

PRoblem	Out of hours mobile ICT demands can have a negative impact on employees' wellbeing
Objective	To co-design a toolkit to mitigate the negative impact of out of hours mobile ICT demands
Design	Basing the co-design around a recognised participatory methodology.
(end)Users	Employees, Managers and HR professionals
Co-creators	Employees, Managers and HR professionals
Evaluation	Completed through the review of the prototype toolkit during Time 2 of the design process.
Scalability	Evaluation of the extent to which the prototype will be applicable for use across a wider population (e.g. different sectors, working patterns and occupations).

Table 12 – The application of the PRODUCES Model for the design of the toolkit

Leask et al. (2019) highlight that effective co-design methodology should combine inputs from service providers and end users. The proposed combination of participants in this research aims to provide this balance, through the recruitment of both HR practitioners and managers (as both service providers and end users) and employees (end users). It also fulfils the two sampling requirements which Leask et al. (2019) specified – i.e. ensuring a representative sample of end-users are recruited as co-creators, and that there is a representation of all necessary expertise from all stakeholder groups.

Leask et al. (2019) also highlighted a number of procedural components that should be in place for the co-creation of an intervention:

Highlighting the purpose of the process	Ensuring that the co-designers are fully aware of and agree with the purpose of the co-design process at the outset. This can subsequently act as a point of reference throughout the design process.
Up-skilling of co-designers	Ensuring the sharing of relevant knowledge with co-designers in advance of the co-design of the intervention
Prototyping (or pilot testing)	Developing a conceptual product based on information gathered through the co-design process. This allows co-designers to visualise their thoughts and suggest improvements for the intervention.
Structure	Recommendations of the co-design process lasting between 18 and 28 hours. Each meeting show have a structure and clear aims, although this should remain flexible.
Interactive techniques during meeting	Using techniques such as brainstorming, modelling scenarios and end-user personas to help generate ideas and content for the intervention.

Fieldwork tasks outside the meeting	Activity outside of the co-design meetings to gain a deeper understanding. This can include field testing of the prototype and interactions with non-academics outside of the co-design group.

Table 13 – The procedural components required in co-designing an intervention, as identified by Leask et al. (2019)

These procedural components have been cross referenced to the study's co-design stages, as outlined in the following section.

2.2. Co-Design Stages

The co-design stages were sequenced to enable participants to reflect on the current practices within their workplace around out of hours ICT demands, and to offer practical suggestions around the strategies needed to tackle potential negative impact. The use of the same participants across Times 1 and 2 allows for the iterative reflection cycle that is central to participatory models such as Participatory Action Research (e.g. Baum et al., 2006). The co-design stages are shown in Figure 3.

2.3. Integrating the Findings of Study 1

The findings of the systematic literature review conducted in Study 1 have informed both the research design and outputs of the current study. Firstly, Study 1 showed clearly that **individualisation** of strategies was likely to be key success factor. This led to the two decisions in the design of the current study. Firstly, it was decided that the toolkit format would maximise the opportunity for individual users to tailor a set of solutions that would suit their personal preferences and team / organisational circumstances. Secondly, a co-design methodology for the toolkit to maximise the real-world relevance and utility of these strategies, through directly involving potential end-users.

The findings of Study 1 identified four main groupings of Strategy, Individual, Leader, Organisational, and Societal (Table 8). As shall be seen in Section 3, this categorisation influenced the overall structuring of the prototype toolkit. As Study 1 highlighted the importance of the interplay between the individual and their environment, this was taken into account in the preparation of the toolkit content – both in terms of how individual, leadership organisational considerations were introduced to the user, and also through guiding the user to consider the interplay between these different strata. This reflects the importance of considering the interaction between different strata of theory, as flagged by Brunson et al. (2023) in the content of the critical realist research philosophy.

2.4. Ethical Approval

The Board of Ethics at Birkbeck, University of London granted ethical approval for this work in October 2021. Potential participants who expressed an interest were given further details about the purpose and requirements of the study (meeting the ***highlighting purpose*** procedural component described by Leask et al, 2019). Participants were also given details about data storage, anonymity of contributions and right to withdraw. Those who wished to participate signed a consent form. The researcher is a chartered and registered psychologist, and adhered to the BPS Code of Ethics and Conduct (BPS, 2021) and HCPC Standards of Conduct, Performance and Ethics (HCPC, 2016) throughout the research.

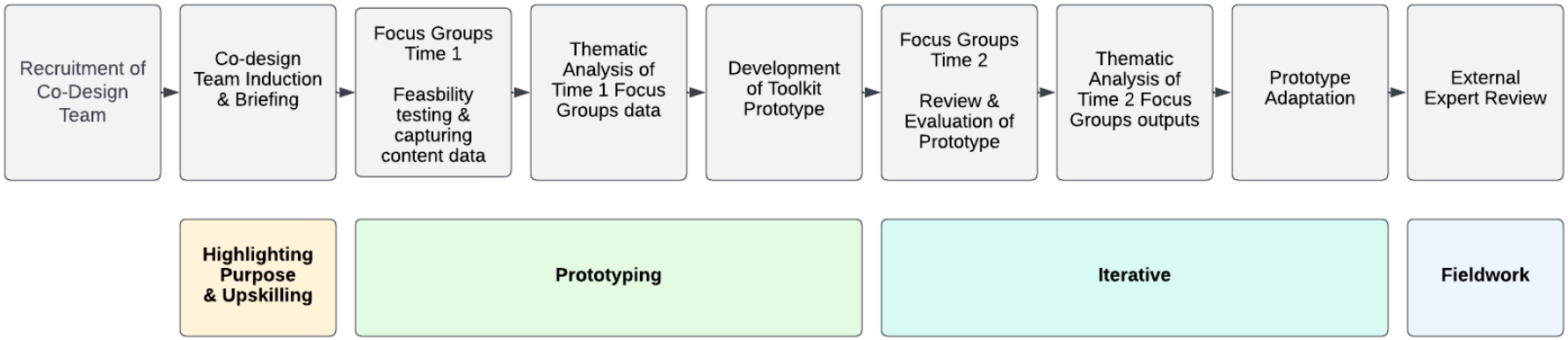

Figure 3 – Co-design stages used in development of toolkit, mapped against Leask et al. (2019) co-design procedural components.

2.5. Recruitment and Induction of Participants

Participants were initially recruited through social media channels (primarily LinkedIn posts), through which a participant invitation document was distributed (Appendix C). Any potential participants were sent an information sheet outlining research procedures, participant rights etc. (Appendix D). The inclusion criteria for participants were that they should:

- work within an organisational setting (which could include self-employment)
- have mobile devices through which they have access to work-related emails, calls, messages etc.
- work within an environment in which are no existing policy or legislative restrictions on out of hours work-related mobile ICT usage.
- be available to participate through all of the co-design stages.

The sample was made up of the following three groups:

- **Organisational Leaders and Managers** - including both team leaders (who have influence over local expectations and working practices within their own team) and senior leaders (with the broader influence over culture and working practices within the organisation).
- **Team members / Employees** – whose approach and attitudes to out of hours working will be influenced by the team, organisational and stakeholder expectations, as well are their own segmentation preferences.
- **Human Resources / Occupational Health representatives** – who have responsibility for organisational policy and practice around employee wellbeing and work-life balance.

No restrictions were placed upon the sectors / industries represented by the participants, and focus groups had cross-sector representation (including public, commercial and third sector). The aim of this strategy was to maximise the generalisability of the findings, although it is recognised that there are likely to be differing imperatives across different sectors. Robson (2002) presents counterpoint arguments for the use of either heterogenous or homogenous samples in focus groups. It was originally intended that each focus group would include participants from only one of the three participant groups (e.g. team members / employees only). However, in practice, scheduling issues around participants' availability meant that such a delineation was not possible. In line with the arguments of Robson (2002), the interspersion of different roles across the different groups ultimately did offer advantages. The cross-sharing of experiences between employees, managers and HR professionals created valuable debate, insights and challenges during the focus groups.

In advance of Time 1, participants were asked to complete a short questionnaire (Appendix E). This gathered a range of background details, and also included a short measure of participants' personal

boundary management preferences (i.e. segmentor vs integrator - using the four item scale produced by Kreiner et al., 2006), as well as the perceived segmentation norm within their own working environment (using the four item segmentation norms scale developed by Park et al., 2011). Participants were also asked to rate their perceived level of telepressure, using the six item scale developed by Barber and Santuzzi (2015). These scales were used to help ensure that there was a diversity of backgrounds and preferences within the sample. Background details of potential participants were screened to ensure that they matched the eligibility criteria for the research.

In advance of the Time 1 focus groups and interviews, participants were sent briefing documents outlining the purpose and methodology of the research. This included past research findings on the potential negative impact of out of hours demands (See Appendix F). Participants were also sent a summary of the strategies / interventions that had been identified through the literature review and were asked to informally rate each of these for their usefulness, practicability and scalability within their own working content (see Appendix G). Finally, they were asked to reflect on their personal experiences of dealing with work-related out of hours ICT demands, the impact of these experiences, and personal strategies they have employed to mitigate any negative impact. This stage reflected the ***upskilling*** procedural component referred to by Leask et al. (2019), and ensured that the ground rules and facilitation approach for the co-design process were defined at the outset (as recommended by Greenhalgh et al., 2016).

Participants were offered a range of dates to attend focus groups. Where it was not possible for a participant to attend any of the focus group dates, they were offered a one-to-one online interview. These interviews covered the same schedule as the focus groups (Appendix H), and full transcripts of each interview were included in the analysis alongside those of the focus groups. Such a mixed model has been used by previous researchers in situations where full participation in focus groups has not been possible (e.g. Hunter & Magill-Cuerden, 2014; Robinson et al. 2013). Baillie (2017) argues that such an approach represents acceptable practice if subsequently there is systematic analysis of data and clear transparency of reporting.

2.6. Participants

In total 24 participants were recruited to take part in the initial co-design focus groups. This group included 10 male and 14 female participants. The mean age of participants was 43.5 years (minimum 23 years, maximum 66 years).

A total of 21 participants (87.5%) identified themselves as White, 1 identified themselves as Black, Black British, Caribbean or African (4.0%), and 2 identified themselves as Asian or Asian British (8.0%). A total of 16 (66.7%) of the participants had line management responsibilities in their role, and 8 (33.3%) did not. Of those who had line management responsibilities, the mean number of direct / indirect reports was 9 (minimum 1 and maximum 60). As such, the participants included front-line managers, who had immediate responsibility for a small to medium sized team of employees (e.g. one managing a team of four delivering specific services within a professional body, another managing a team providing support services to internal staff within a major private sector organisation). It also included middle to senior managers in a range of leadership roles (e.g. one in a public service delivery role with responsibility for significant number of staff and service delivery, another as head of a large academic department). For those who did not hold line management responsibilities, some were in consultancy positions (either in-house or independent), meaning that they held responsibilities for managing external client relationships.

This range and heterogeneity of participants enabled different perspectives to be brought into the focus group. For example, solutions or strategies which might be effective within an academic environment may be less applicable in a commercial enterprise, and vice versa. Likewise, solutions and strategies which are seen as effective by a manager may be viewed differently by an employee. Those who were in senior management positions were likely to experience significantly higher volumes of email traffic (and potential techno-invasion) than those who carried less overall responsibility. This diversity of participants enabled these potential differences in perception and expectation to be drawn out within the focus groups.

The mean number of weekly working hours reported by participants was 42.9 hours, (minimum 35, maximum 60). Six of the participants (25.0%) held in-house Human Resources roles or closely aligned positions (e.g. organisational development, employee experience etc.).

Nine of the participants worked in the private sector (either management consultancy or transportation sector). Six of the participants worked in the public sector (UK civil service or policing). Four worked as independent consultants, two participants worked in higher educational institutions, and three participants worked in the not-for-profit sector (charities or self-funding professional bodies).

Participants reported a range of boundary management preferences. For the Kreiner et al. (2006) personal work-life segmentation preferences scale (1-7 scale, 4 items), the mean overall response for participants was 4.4 (min=1.5, max=7, SD=1.9). For the perceived work-life segmentation norms scale (adapted from Kreiner et al., 2006) (1-7 scale, 4 items), the mean overall response for

participants was 4.3 (min=1.3, max=7, SD=1.8). For the perceived telepressure scale (Barber & Santuzzi, 2015) (1-7 scale, 6 items) the mean overall response for participants was 4.4 (min=1.3, max=7, SD=1.7).

Overall, the pattern of responses showed a relatively even balance between participants preferring segmentation in their work life balance, and those preferring integration, with both extremes represented within the participant population. The responses also showed that participants experienced differing levels of telepressure, ranging from relatively low levels through to those experiencing significant telepressure. The spread of scores also showed that each focus group contained a range of different segmentation preferences and perceived levels of telepressure. This diversity of experience was important to ensure that the dialogue in each group represented a balance of different perspectives.

2.7. Focus Groups – Time 1 (Concept Testing and Data Collection around Toolkit Content)

All 24 participants took part in the Time 1 focus groups and interviews during January and February 2022. Twenty of the participants each took part in one of four focus groups lasting three hours (each focus group including between four and six participants). Four participants, who were unable to take part in the scheduled focus groups, took part in one hour individual interviews, which covered the same themes on a one-to-one basis.

Each Time 1 focus group was held using the Microsoft Teams platform. The focus groups were held online, as was stipulated at the time as part of Birkbeck ethics approval, due to COVID-related health and safety concerns. All workshops were audio-recorded and auto-transcribed. At the outset, participants were initially given a recap of the research background and aims, and the specific outputs sought from the Time 1 focus groups. This was followed with a facilitated discussion covering:

- Personal observations on the potential negative impact of out of hours demands.
- Personal views on the support strategies that they have used / witnessed in an organisational setting, and the perceived efficacy of these strategies.
- The extent to which proposed toolkit is a viable concept.
- Content that would be important to include in the toolkit.
- What facilitators / barriers are likely to affect the relative success of the toolkit's implementation within the organisational context.

The focus groups therefore provided the opportunity to gather data on the types of strategies being used / witnessed by participants. However, a key aim of the focus groups was to gather feedback on the usability and effectiveness of these strategies, and also to gather participants' views on the relative value of a toolkit to support the use of these strategies. Finally, the focus groups aimed to assess the factors that would act as facilitators / barriers to the successful implementation of such a toolkit in an organisational context.

The semi-structured schedule used for the focus groups and interviews is included in Appendix H. One-to-one interviews were only held in instances where it was not possible for the participant to attend one of the scheduled focus groups, and the same semi-structured schedule was followed. This included the ***interactive*** procedural component specified by Leask et al. (2019), through the use of open questions (with group interaction) to prompt brainstorming activities and modelling around the knowledge, tools and resources which an end user might require. Both inductive and deductive methods were used in the design of the focus groups. The capture of data around the toolkit design was largely inductive, given that this involved the co-design of a new product, and the principles of effective co-design (e.g. Greenhalgh et al., 2016) required that both the researcher and participants approached the co-design without specific preconceptions of what the solution should be. Nonetheless, there were also some deductive components, as participants were asked to review and evaluate potential strategies that had been identified within previous research.

2.8. Analysis of Time 1 Outputs

Reflexive thematic analysis was used in the analysis of the Time 1 outputs, following the six analysis stages proposed by Braun and Clarke (2021).

1) Data familiarisation and writing familiarisation notes
2) Systematic data coding
3) Generating initial themes from coded and collated data
4) Developing and reviewing themes
5) Refining, defining and naming themes
6) Writing the report

A total of 16 hours of transcripts were analysed from the Time 1 outputs. The data familiarisation stage included cleaning the data, and rectifying any mis-transcribed content through reviewing the corresponding audio recording. Scripts were then fully anonymised and uploaded into the NVIVO software package for the purposes of coding. During the familarisation stage, notes were made to capture key themes, and through an iterative review process coding labels were assigned to data. Following this, the codes were aggregated into logical themes, taking into account both the natural clusters emerging, while also accounting for any key findings from the systematic literature review conducted in Study 1. The coding at this stage was primarily inductive, to allow relevant themes to be identified within the data without a preconceived theoretical framework. The coding structure can be found in Appendix I.

2.9. Design, Distribution and Review of the Prototype Toolkit

The coding structure was considered alongside the findings of the systematic review (Eyre et al., in preparation) to inform both the structure and content of the prototype toolkit. The content of the toolkit took into account broader theories such as Goal Setting Theory (Latham & Locke, 2002) and adopted a goal-directed approach, broadly designed around the GROW coaching model (Whitmore, 2009). This model requires individuals to consider their Goals, Reality, Options and Will (motivation) in the context of behavioural and cognitive change around out of hours mobile ICT demands. The model provides a useful heuristic for framing the journey that the individual will need to make to achieve effective behavioural change. The GROW model has been found to be successful when used in randomised control trials of one-to-one coaching (e.g. Grant et al., 2009; Grant et al., 2010). While the GROW model has not been directly cited in research involving toolkit development, many of the principles are aligned with those evident in past research – i.e. using the toolkit content to steer

users towards establishing personal, tangible goals, and then exploring the support and personal motivation needed to achieve these goals (e.g. Sezier et al., 2018). This also reflects the principles of the WhIM model for habit change – i.e. that individuals need to have a clear and rationalised plan, and intention to change (Gardener et al., 2016; Russell et al., 2021). Use of this approach would also give toolkit users the opportunity to trial adaptive coping strategies around out of hours mobile ICT usage. Such strategies have previously been found by Gaudioso et al. (2015) to be effective in reducing work exhaustion levels.

The development of the prototype toolkit content was an iterative process, in line with the emergent approach described by Greenhalgh et al. (2016), and the ***iterative*** procedural component described by Leask et al. (2019). This involved cross-checking the different themes identified from the Time 1 data, then identifying and developing the content (e.g. factsheets, reflective exercises, questionnaires) which would help the toolkit user to better understand these themes, and determine any action that they wished to take as a consequence. The development of this content was also anchored in past research findings – e.g. the findings of Barber et al. (2019) that perceived control over leisure time moderated the relationship between telepressure and global evaluations of work-life balance. The inclusion of goal-setting exercises intended not just to increase individuals' sense of agency and control over how they spend their leisure time, but to bring about tangible changes in their behaviour and thinking around the management of out of hours ICT mobile demands (in line with past intervention studies in this area – e.g. Russell et al, 2021)

The thematic framework derived from the Time 1 focus groups guided the outline structure for the toolkit, in terms of both format and content. Detail of the cross referencing process used in this design stage can be found in Appendix J. The content was then refined by referencing back to the different viewpoints and perspectives offered by participants (e.g. those representing different sectors, different segmentation preferences etc). Reference was also made to past examples of toolkit co-design research (e.g. Sezier et al., 2018; Dennett et al., 2022; Mudge et al., 2020; Smith et al., 2021). These design steps were repeated for each of the themes identified in Time 1, with care being taking to ensure that the toolkit content followed a logical and accessible structure. An independent review of toolkit content was completed by a Chartered Psychologist and academic prior to the Time 2 consultation. This stage reflected the ***prototyping*** procedural component referred to by Leask et al. (2019).

The prototype toolkit was published in restricted format using the Google Drive platform. It was then distributed to all participants (with hyperlinks for ease of access to other components). Participants were asked to review the materials prior to the Time 2 evaluation focus groups.

Participants were provided with a feedback proforma, to guide their initial review around specific considerations on the relative effectiveness of the overall content and individual sections (Appendix K). Where participants were unable to attend the focus groups, they were invited to provide feedback through a one-to-once interview, or (if an interview was not possible) via written feedback using the proforma.

2.10. Co-design focus groups Time 2 – Review & Evaluation of Prototype Toolkit

In total, 19 of the 24 original participants provided feedback on the prototype toolkit, following review of the materials. The consultation feedback was provided through a number of channels (with some participants provided feedback through more than one channel). Two online focus groups were held with a total of 10 participants, one-to-one online interviews were completed with six participants, and five participants provided written feedback through a template.

This stage reflected the ***iterative*** co-design stage referred to by Leask et al. (2019). It ensured that the same group of participants were able to critically assess whether the data they had provided in Time 1 had resulted in an effective, co-designed prototype toolkit. In particular, participants' views were sought on the acceptability, practicality and scalability of the toolkit. They were also asked to consider factors that might influence the successful implementation of the toolkit, and the extent to which the toolkit content was representative of their views and opinions (Leask et al., 2019). Again, at Time 2 the focus groups and interviews were recorded and transcribed.

2.11. Reflexive thematic analysis of Time 2 Outputs

All data gathered at Time 2 (focus groups, interviews and written feedback) was thematically analysed, with results being aggregated into key themes. The coding at Time 2 took a more deductive approach than Time 1, given that the coding framework from Time 1 was used as an overarching guide for interpretation. Moreover, many of the themes raised at Time 1 were also expanded upon through the data captured at Time 2. Sentiment analysis was also conducted on the data, to categorise the polarity of feedback comments (positive, neutral and negative) relating to different toolkit components. Content-specific feedback was clustered according to the relevant section of the toolkit. The overall outputs from the Time 2 analysis were then reviewed to produce a list of specific amendments and enhancements for the toolkit structure and content.

2.12. Revisions to Prototype Toolkit

On the basis of the Time 2 analysis and resultant recommendations, further revisions were made to the toolkit content and format. For those longer term adaptions which were not possible to complete within the constraints of this research project, these were summarised and planned for a future toolkit update.

2.13. Expert review

Policy and practice experts were consulted to further test the feasibility of the prototype toolkit. It was presented to a group of 23 practitioners at a 'Wellbeing for Hybrid Workers' Masterclass. Attendees were members of a research consortium focussing on wellbeing at work, including representation from the policy and professional bodies (e.g. Health and Safety Executive, IOSH, CIPD, BITC, Acas) as well as cross-sector representation from the private sector (e.g. Arup, ISOS) and public sector (e.g. Ministry of Justice, NHS). Initial evaluative comments and questions from the group were recorded. This presentation was followed up with a survey (Appendix L) sent to all attendees to gather their views on the usability and effectiveness of the toolkit. This questionnaire had a response rate of 1.

3. Results

3.1. Time 1 Focus Groups and Interviews

3.1.1. Overview

The reflexive thematic analysis from Time 1 focus groups and interviews produced a hierarchical framework, which is shown in detail in Appendix K. A total of 240 codes were identified through this analysis, which were then clustered into the following eight themes:

- The negative impact of out of hours demands
- The feasibility of the toolkit concept
- Attributes of the broader working context relevant to out of hours demands and impact
- Attributes of the individual relevant to out of hours demands and impact
- Individual strategies for minimising negative impact
- Shared strategies for minimising negative impact
- Leadership strategies for minimising negative impact
- Organisational strategies for minimising negative impact

Each of these themes is described in briefly in the following sections.

3.1.2. The Negative Impact of Out of Hours Demands

The majority of participants stated that they regularly experienced out of hours mobile ICT demands, and many expressed concerns about the impact that this can have on their wellbeing. Participants reported personally experiencing or witnessing a range of negative impacts:

Impact on Work	• Bullying / Grievance Cases • Increased turnover / staff quitting as result of excess out of hours demands • Decline in productivity after sustained out of hours demands • Frustration and terseness coming across in out of hours communications • Presenteeism behaviour • External impression that organisation is 'peddling too hard' if extensive out of hours communication.
Impact on Home & Family Life	• Disturbance to family life • Habitual checking of messages out of hours • Working while on holiday.
Impact on Individual	• Burnout • Heightened sense of vigilance due to expectation of out of hours contact • Inability to detach • Working while on sick leave • Negative impact on sleep

Table 14 – Negative Impacts of out of hours mobile ICT demands reported in Time 1

3.1.3. Views on Feasibility of the Toolkit Concept

The participants generally felt that the toolkit concept was both relevant and important. The feedback showed a concern amongst participants about the potential impact of out of hours mobile ICT demands, and participants generally felt that practical resources designed to help individuals and organisations in minimising negative impacts would be advantageous.

"I think it's valuable as a concept. It would probably need to be multifaceted. So there are elements of it that are about educating individuals about what they can do, but having that organizational leadership level input as well. And looking at things that are, you know, practical steps that organisations can take in terms of the way they organize work. And what their expectations are in terms of the culture, as well."

Participant 2

Some participants questioned the feasibility of creating a 'one-size-fits-all' toolkit, and expressed concerns about the breadth and volume of content that would be required to reflect the range of individual and systematic factors that would need to be accounted for. A consistent message was that any toolkit would need to be sufficiently flexible in terms of its application to account for a broad range of individual, team and organisational situations. The need to provide tailored content for individuals, managers and organisations respectively was also supported. The requirement for flexibility to suit individual preferences was at times exemplified through participants expressing opposing opinions about how they personally managed the same issue (e.g. whether or not to create separation between work and personal devices).

3.1.4. Attributes of the Broader Working Context

Participants highlighted a range of contextual factors which they felt would be influential in considering the implementation of the toolkit. These included their personal experiences around increasing email volume, the impact of multiple channels of contact, and the globalisation of work. A senior leader in emergency services described the challenge he faced in managing the multiple channels that were available for out of hours contact in his organisation:

"We've got about 16 different ways to contact (colleagues). And that's a crazy situation especially if the urgency of getting hold of someone is important."

Participant 12

One central theme was the impact of the 2020 COVID lockdown, and the resultant rapid changes to working practices, both through increased home working, and increased flexibility around working hours. For example, participants described an increased willingness to schedule online meetings during any available gaps in the day. This resulted in employees having to use evenings to catch up on emails and other work through mobile technology.

"I think . . . the reason a lot of people are doing out of hours and mobile work is that they're time poor during the day and we've all got back-to-back meetings during the day."

Participant 3

Also, participants described mobile technology leading to increased expectations amongst colleagues and clients around immediacy of response, resulting in pressure to monitor and respond to out of hours messages. Business pressures were also an important factor, with participants citing increased expectation of out of hours availability arising from longer operating hours:

I think it's where organizations expect to be able to operate a 24 hour business or a 'long hours' business, without long hours resource or putting shifts on. So okay, we're going to operate till 10 o'clock at night, but we're just going employ 9-5ers and expect them to cover."

Participant 20

3.1.5. Attributes of the Individual Relevant to Out of Hours Demands and their Impact

Participants highlighted the influence of individual factors and personality on the level of engagement with out of hours mobile ICT demands. Professional identity was seen as important – i.e. the degree to which an individual might see out of hours activity and a symbol of dedication and commitment aligned with their own work-related identity. The complex interaction between the individual and their leader/organisation was also key. In particular, participants highlighted the importance of the sense of agency and control that the individual felt they had in choosing to 'switch-off'. Some participants also acknowledged that out of hours activity can become a habitual, self-driven commitment, which is not necessarily the result of pressure from the organisation:

"I'm sitting on the sofa with my wife watching TV, I just checked my emails and there's a couple that I could just respond tonight, and they're done. No, no pressure from anyone else – I've got no big bad boss saying you must do it. It's me driving all the activity."

Participant 3

"A lot of the time it's not explicit. You're not being specifically asked to respond after hours to these things. But it's become easier and easier to do that hasn't it? It's tempting to just check."

Participant 21

Participants highlighted that these factors could be influenced by perceived level of choice, self-discipline, self-awareness and professional identity. Individual career context was seen as important – some participants flagged concern that those who are early in their careers may not feel they have the licence to challenge out of hours availability expectations:

"I think, as an early career professional, I wouldn't have pushed back, you know, being quite permissive and genuinely wanting to be compliant and please, but it (out of hours availability expectations) was just really inappropriate. And I wanted some sort of support to say, 'yes, it's inappropriate'. "

Participant 7

"No one teaches you this stuff. And I remember feeling there was an ad hoc way that I found out that somebody didn't email straight back when they got an (out of hours) email. With clients, stressed parents, you know, it's a sort of parent that you email them back. And <my manager>'s like, "No, no, no, you don't do that. Because that's just speeding things up. Don't get back to them 'til tomorrow". That was just found out in a really ad hoc way. And it was like a lightbulb moment."

Participant 10

"I think for me, obviously, early in my career . . . I find it useful to hear other people kind of say, "oh, no, I can't do that" (in relation to out of hours demands).

Participant 17

Overall, the data highlighted that the degree to which individuals experience an intrinsic drive to check messages and re-engage with work out of hours is likely to be determined by a broad and complex array of factors.

3.1.6. Strategies Identified – Overall

The Time 1 analysis, combined with the findings of the SLR, provided a framework of available strategies for minimising the negative impact of out of hours demands. This is summarised in

Individual	Expectations management	(Study 1 & Study 2)
	Technological boundary management strategies	(Study 1 & Study 2)
	Inbox management	(Study 1 & Study 2)
	Physical boundary management	(Study 1 & Study 2)
	Temporal boundary management	(Study 1 & Study 2)
	Minimising the out of hours disturbances of others	(Study 1 & Study 2)
	Out of hours messages – content and tone	(Study 1)
	Non-work detachment activities	(Study 1 & Study 2)
	Data and analytics	(Study 2)
Leadership	Clear prioritisation of team members' wellbeing	(Study 1 & Study 2)
	Clarity on work that is high priority	(Study 2)
	Management of overall work volume	(Study 2)
	Role modelling boundary management	(Study 1 & Study 2)
	Challenging out of hours activity	(Study 1 & Study 2)
	Clarifying expectations on out of hours availability	(Study 1 & Study 2)
Organisational	Supporting HR policies and activity	(Study 1 & Study 2)
	Training and development	(Study 1 & Study 2)
	Effective communication throughout organisation	(Study 2)
Shared	Individualisation and co-creation of boundary management preferences	(Study 1 & Study 2)
	Trusting and supportive relationships	(Study 2)

Table 15 – Summary of Available Strategies derived from SLR (Study 1) & Time 1 Analysis (Study 2)

A range of individual strategies were described by participants, which were seen to have varying levels of effectiveness. These included managing the expectations of others, technological, physical and temporal boundary management, out of office messages, data and analytic tools, and detachment activities. The data provided an insight into the relative levels of usage of certain strategies, while also getting a qualitative understanding of their perceived effectiveness. For example, many of the participants reported using messages within their email signature blocks stating that they might be sending emails out of hours, but were not expecting an immediate response from the recipient. However, there were concerns raised by some participants that such messages quickly become ignored if used routinely, and were likely to be far less effective than personalised, direct communication with colleagues to negotiate out of hours availability expectations.

A range of views were shared about how leaders can assist in minimising negative impacts. These included role modelling of boundary management behaviour, leaders giving employees clear prioritisation of work, and leaders acting as a buffer to protect employees from excessive client demand.

"I know there are some managers that couldn't care less if their employees work all night on something as long as they get it. And I think you can only change that from the top, you know, by sending strong messages."

Participant 23

"The only success I've had in terms of emails it was over the Christmas period, because the organisation shuts from Christmas Eve through till the day after New Year's Day. And the last couple of years, I've said, right, nobody's going to send any emails, nobody's going to answer any emails. We're all off. And anyone who breaks that can pay a forfeit to charity. And in fact, it's worth it because people said, 'yeah, that's brilliant. We've actually shut it down and we've not had emails for the week.'"

Participant 22 (Manager)

At an organisational level, HR practices and policies which supported employees in creating personalised boundaries were seen as important. Participants also identified that the technology provided by the organisation needed be supportive of boundary management – a lack of personal control over notifications etc. would prevent the use of individualised technology-based boundary management strategies. Standardised organisation-wide technology settings (which the user has little control over) had been found by some participants to be a potential barrier. Participants also

felt that the range of individual and organisational data that could be derived through tracking of out of hours activity (e.g. through applications such as Microsoft Viva etc.) could be both beneficial and problematic. For individuals, access to individual data around out of hours activity could be beneficial for self-reflection and action planning. However, at an organisational level, there was concerned that data on levels of out of hours activity could be abused by organisations, through rewarding or reinforcing presenteeism behaviour.

The Time 1 analysis also showed that the formulation of some strategies will be shared commitment between the employee and manager / leader (e.g. negotiated, individualised approaches to boundary management). Notably, participants identified that tension was often caused by a mismatch of expectations between an individual and their manager, or clients, around when it was appropriate to expect out of hours availability:

"I said to (my manager), 'I'm on my holiday, you know where I am', and he was like 'but did you get my email?'. And I thought that was really inappropriate. But then I raised the conversation with my manager, who didn't seem to think it was inappropriate." (to expect availability while on holiday).

Participant 7

Achieving mutually acceptable expectations will therefore rest on a clear and honest dialogue between manager and employee, and an organisational culture that supports employees' choice to detach from mobile ICT demands during non-work time. Where participants identified multiple potential channels of out of hours contact, the simultaneous monitoring of these various channels led to a degree of pressure and uncertainty. Participants described tackling this through applying personal, informal prioritisation strategies – i.e. seeing phone calls as highest priority, with emails far lower. However, participants recognised that such uncertainty would be far better managed at an organisational level, through having agreed practices and priorities about which communication channels should be used when.

3.2. Development of the Prototype Toolkit

The initial cross-referencing of the reflexive thematic analysis with potential toolkit content can be found in Appendix K. This also took into account the findings of the Study 1 systematic literature review. It was clear that the toolkit would need to be able to operate on a multi-level basis (individual, manager, organisation), while retaining sufficient focus to be relevant to each individual group. The analysis of the themes which emerged from the Time 1 data led to the conclusion that

the content should be split into two main sections; an Individual Workbook (Appendix M), and Leader & Human Resources Guidance (Appendix N), with a range of accompanying worksheets (Appendix O). The Time 1 data had shown the close inter-relationships between leadership and organisational factors (e.g. setting the cultural expectation and leadership role modelling and the organisational cultural expectations for out of hours availability). These in turn closely related to the practical steps that leaders and Human Resources professionals might adopt to account for these (e.g. organisational policy and training). Consequently, while consideration was given to producing separate toolkit components addressing leadership, HR, and organisational factors, the inter-relatedness of these factors led to the conclusion that these would be better addressed together. Moreover, a key theme of the data captured from participants was the need to ensure the content was focussed, succinct and accessible to a busy employee or leader. The simple split of the content between two key components was intended to reflect this aim. The overall structure of the toolkit is shown in Table 16:

Part I – Individual Workbook	
1.	**1. Overview**
2.	**Understanding My Current Out of Hours Demands** • Including questionnaire and guide for interpreting responses.
3.	**Factors Contributing to My Out of Hours Demands** • Including reflective questions on intrinsic and extrinsic demands, and guide for interpreting these. • Linked to Worksheet 1 – Contextual Factors Influencing Out of Hours Demands.
4.	**The Personal Impact of My Out of Hours Demands** • Including reflective questions around what personal impact the demands have. • Linked to Worksheet 2 – Potential Negative Impact of Out of Hours Demands.
5.	**Strategies for Managing Out of Hours Demands** • Structured around key themes from Time 1 analysis and SLR (e.g. expectations management, technological, temporal and physical boundary management strategies, detachment activities). • Including reflective questions. • Linked to Worksheet 3 – Strategies for Managing Out of Hours Demands
6.	**6. Goal Setting** • Development of clear goals around managing out of hours demands. • Including actions, support needed, expected benefit
7.	**7. Next Steps** • Reflection on factors that will influence the successful achievement of proposed goals.

Part II - Leader & Human Resources Guidance	
1.	**Overview**
2.	**Initial Points for Consideration** • Challenging the leader / HR representative to reflect on the current culture and support within the organisation. • Encouraging leaders to complete Individual Workbook before using this guidance, to boost self-awareness of the impact of their own activity.
3.	**Key Success Factors** • Organisational success factors, derived from Time 1 analysis and SLR.
4.	**Possible Components of a Team / Organisational Initiative around OOH Demands** • Range of proposals drawn from the SLR and Time 1 findings. • Including policy / guidance, monitoring, induction, awareness raising, technological flexibility, managers' skills, awareness and accountability, organisational culture. Listing potential benefits, considerations and useful related resources.

Worksheet 1 – Contextual Factors • Listing range of contextual factors influencing Out of Hours Demands. • Including factors such as working across timezones, response time expectations, commercial pressures etc. • Derived from SLR and Time 1 Findings. • Summary on potential impact of each on Out of Hours Demands.
Worksheet 2 - Potential Negative Impact of Out of Hours Demands • Listing a range of potential negative impacts, derived from both SLR and Time 1 Findings.
Worksheet 3 – Available Strategies • Listing 15 strategies derived from both SLR and Time 1 Findings. • Potential Benefits, Considerations and related resources provided.
Worksheet 4 – Additional Resources • Range of extra resources to assist individuals and organisations in managing Out of Hours demands.

Table 16 – Structure and Content of Prototype Toolkit

Analysis of the emergent themes showed that the factors influencing out of hours demands could broadly be divided into intrinsic and extrinsic factors, so this demarcation was reflected in the content of the resources provided. For example, Section 3 within the individual workbook prompts the user to distinguish between the intrinsic and extrinsic drivers which create out of hours demands.

The structure of the individual toolkit broadly reflects GROW model for coaching (Whitmore, 2009) in the following way:

Goal	Establishing the personal / organisational need for some form of behavioural / cognitive change around out of hours demands. Prompts initial engagement in the toolkit (and subsequent refinement of goals in Section 6)
Reality	Considered by the individual in Sections 2-4 of the individual toolkit – i.e. what are their current experiences in relation to out of hours mobile ICT demands.
Options	Considered in Sections 5-6 of the individual toolkit – i.e. what strategies are available for achieving the change needed (and assessment of which will be suitable for the individual).
Will	Considered in Sections 6-7 of the individual toolkit - i.e. clear goals setting, and considering the factors which will support / hinder progress towards these goals.

Table 17 – mapping the GROW model (Whitmore, 2009) to the content of the individual toolkit

The structure is also intended to reflect aspects of the WhIM model, as applied by Russell et al. (2021) in habit change around work related email. Specifically, Sections 1-5 of the individual workbook help understand the background for a rationalised plan (i.e. why any change of behaviour around out of hours demands is important for them, and to set up the intention to act). Sections 6 and 7 then help the individual set out specific goals and intentions around behavioural change, and potential facilitators and barriers, and make a clear commitment to actioning these plans.

3.3. Time 2 Results

At Time 2, participants were asked to review and comment on the prototype toolkit. These results are summarised in the following section.

3.3.1. Perceived Strengths of The Toolkit

Participants' feedback suggested the a number of benefits could be gained from using the toolkit. While some of the participants stated that they had informally used elements of the toolkit in their own work context, these observations were primarily made on the basis of reviewing of the toolkit content, as opposed to systematic using and testing the toolkit. Consequently, it is important to note

that the strengths listed here are based on participants' personal observations, rather than formal evaluation.

- Increased understanding of the range of different strategies that are available to minimise the negative impact of out of hours demands.
- Increased self-awareness about the participants' own out of hours behavioural patterns.
- Increased self-awareness about the potential impact their own behaviour might have on others.
- Increased reflection on the root causes of their out of hours demands.
- Enabling users to clarify how they might address any issues that they have identified, through setting out clear behavioural change goals.

"The toolkit is an exceptionally rich and informative resource that identifies responsibilities both at the individual and organisational level. Particularly helpful are the reflection questions about the impact on individuals in terms of an assessment of how this affects them."

Participant 6

"It's clear, well-structured and delivered in a positive way that I feel people will engage with. I think one of the biggest strengths is the way it engages the user and recognises that none of this is easy."

Participant 3

"It works really well, I think. And there's not too much content, but there's enough to kind of get your head round what's being talked about."

Participant 23

Many of the participants had completed the exercises within the toolkit, and commented that it had given them ideas about new strategies to personally employ in managing their own out of hours demands.

The group generally felt that the content and language was clear and accessible, and the overall layout generally working well. Some participants felt that at certain points the language could be simplified (particularly around the use of acronyms). Generally, the group felt that the length / content of material was acceptable, although a small number of participants did comment that the toolkit had seemed lengthy when they were reviewing it.

"I think the workbook raises awareness really well and the way it leads the user here does it very subtly and supportively without being patronising."

Participant 3

The format reflecting the GROW model worked effectively for a number of participants:

"Yeah, I liked that structure. I think it kind of educates you and then you are able to identify what you're doing as an individual, and then reflect on that and delve in a bit deeper with those questions as to like, why you've been doing that, is it internal or external. It really it does give you the opportunity to play a big part in resolving or not resolving the issue, but kind of establishing the root cause and recommendation on how to manage yourself, your time in the future."

Participant 17

The majority of participants indicated that they felt the toolkit content was directly relevant to their own circumstances and role (participants were predominantly knowledge workers working in environments with regular office hours). They highlighted that the content and format of the toolkit would need to be adapted and contextualised for different working environments (e.g. shift workers, those with contracted out of hours on-call arrangements, frontline workers whose roles are not desk-based etc.).

The feedback indicated that the Individual workbook was seen as the strongest component of the toolkit, on the basis that it challenged individuals to question their current working practices, and set out specific goals on how they might change their own behaviour where needed.

"I like the way it's structured from understanding, to factors, impacts, strategies and goal setting – it has a nice flow and guides the participant through the content from understanding to action. I like how the extra content is provided in links out to extra resources. "

Participant 4

3.3.2. Toolkit Limitations & Proposed Future Enhancements

Participants flagged some limitations in relation to the toolkit content, and made a number of practical suggestions for future enhancements (summarised in Table 18).

Practical	• Broaden the scope of the leader & HR workbook
Presentational	• Use of a flowchart to guide the user through the toolkit. • Providing examples while avoiding leading the user to a particular set of conclusions. • Minimise the use of acronyms / abbreviations. • The Leader / HR component needs to be more interactive. • Needs to appear more engaging to draw user in.
Explanatory & Guidance	• Use of vignettes / case studies to exemplify out of office challenges and how strategies can be applied. • Adding a 'making a business case' advice sheet for HR. • Use of more behavioural change models
Motivational	• Including an individual reflection on the impact if they do not achieve their intended goals. • Include explicit rating of how motivated the individual feels to facilitate change, and whether they feel empowered to act.

Table 18 – Proposed Future Enhancements for Toolkit

The participants generally felt that further work was needed on the presentation of the prototype, to make it more attractive to potential users, and to assist users in navigating through the content (e.g. through providing an interactive flowchart to give users direct access to particular sections, and to track progress). Other enhancements included practical resources for HR practitioners – e.g. around how to make a business case for an intervention of this type.

The participants' feedback indicated that the Leader & HR Guidance component would be useful for stimulating thinking at an organisational level, but should go further in challenging leaders on their personal role in generating out of hours activity, and the action which they will personally make to ensure they are providing a positive influence within their organisation. This theme is important, as there was clear consensus amongst participants that without the broader organisational commitment, the potential effectiveness of the toolkit would be limited. As such, future updates would need to ensure that within the leader resources, the relevant sections are expanded and focussed to maximise the level of self-reflection and awareness for leaders.

"The (individual) workbook is a more complete guide and leads to clear outcomes for individuals so feels more complete than the employer one - but with good reason. I think the structured approach works really well and the way it is delivered and communicated is engaging and constructive."

Participant 3

Some participants suggested using hypothetical vignettes / scenarios to stimulate leaders' reflection on the impact of their own behaviour and decisions. However, this proposal was not universally endorsed, with other participants stating that this may come across as patronising or cumbersome. Notably, some of the participants' feedback stressed the importance of focussing users' minds on their level of commitment to behavioural change (e.g. through rating their current level of motivation, and challenging them to envision the scenario if they are unable to achieve the goals that have committed to within the workbook).

3.3.3. Proposed Delivery Format

There were wide ranging views about the ideal delivery format for the toolkit, with a number of participants recommending that it should be available to users in multiple formats. Participants flagged the importance of ensuring that content was fully accessible to neurodiverse users. Some felt that having standard, fixed soft copy files (e.g. Adobe Acrobat) would be most beneficial, as it would present minimal technology barriers, and would allow for portability and easy use in individual coaching sessions. However, the majority of participants felt that the toolkit would be far more engaging in the form of an app or website, allowing greater levels of interactivity and immersion in the exercises and content (e.g. potential use of short clips, auto-scoring of questionnaires etc).

"It could be made very interactive with videos with examples to bring to life the different issues caused by out of hours demands, with stats, plus showing strategies to help combat them. It could have interactive webpages with sections for people to complete which expand and collapse, to answer the measure and get a 'score' or output, etc."

Participant 4

3.3.4. Success Factors for Implementation

Participants identified a number of factors that would be required for successful implementation of the toolkit. These included individual commitment, leadership engagement and support, the consistency of leaders' behaviour with the espoused culture around boundary management, technological know-how, and broader considerations around the management of the volume of work and 'spill-over' into non-contracted hours. A particular theme related to challenging leaders who may (consciously or unconsciously) be perpetuating out of hours demands for their teams:

"If my manager or someone who's a bit more senior than me, is working later and is online, it makes you think, 'Oh, should I be doing that as well?', like, even if they have said, you know, even if it's very,

very clear what the expectations are that there is no expectation to work outside of hours. You do kind of feel that well you're doing it, so should I be doing that?"

Participant 17

"I would like a self-auditing tool for leaders, looking at the values of the organization and how their behaviours match that. I'd like . . leaders to have tools to have a bit more self-awareness about their practices, a bit more knowledge there."

Participant 10

"I think leaders set the tone. The policy is the formal thing, and to me any toolkit, to be effective, would have to have to address all of these different elements together. I don't think it is enough to do just individual stuff, or even maybe just for the manager or just the organization. It's only by having sort of action points and things done at each of those different levels that it will work. It has to be systemic."

Participant 13

Participants who were leaders provided practical examples of behaviour which they had used to minimise the out of hours demands placed on others:

"I'll leave an email in draft and then press send the next morning. Particularly junior staff, I try not to do that (send out of hours) because when your boss sends you something it does up the ante of it."

Participant 23

There was also feedback on wider activities that could support the successful use of the toolkit within an organisation. These activities included:

Pre-launch & Launch	Initial exploratory work within the organisation (prior to toolkit adoption), to determine the scope, scale and type of out of hours mobile ICT activity.
	'Soft-launching' the toolkit with a sample of employees who are clearly struggling with out of hours demands. This would help to determine the value it can add within the specific organisational context before broader implementation.
	Preceding the introduction of the toolkit to a group with a facilitated session with team members. This would aim to explore current group expectations and challenges, prior to individuals and managers starting to use the toolkit content.
Context of Implementation	Incorporating the toolkit into a package of individual coaching, to support the employee in establishing and working towards their behavioural change goals.
	Incorporating the toolkit into a wider support package around time management or stress management
	Co-creating a team charter around out of hours demands to support the implementation of the toolkit.
	Using the toolkit as part of a routine performance appraisal process for managers. Their appraisal outcome would be partly based on the extent to which their behaviour supported the effective management of out of hours demands.
	Adaptation of the toolkit where necessary, to suit specific sectors, working patterns and role types.

Table 19 – Activities identified to support successful toolkit adoption.

3.3.5. Potential Barriers Identified for Successful Implementation

The data gathered at Time 2 highlighted a number of potential barriers to successful implementation. The primary barrier identified was a lack of support from immediate manager and senior leadership:

"I really liked the goal setting – I love an action plan. But if my line manager is expecting me to figure this out on my own, how does that work?"

Participant 6

This emphasised that an individual using the toolkit in isolation is likely to have limited success in minimising negative impact if their manager and organisation do not have aligned expectations.

Participants also highlighted that the toolkit and its outputs need to be considered in context. For example, they felt it would be unrealistic that an executive on a six-figure salary would avoid out of hours demands altogether. Unless expectations are contextualised and relevant, this could undermine the credibility of an initiative involving the toolkit.

A range of participants described how their organisations had committed time and effort to supporting employees around broader aspects of wellbeing - examples included encouraging employees to put protected time in their diaries during the day. However, some participants described how there was often a disconnect between the messages espoused within these initiatives (e.g. taking lunch breaks away from the desk), and the resultant behaviour demonstrated by employees:

"My organization is aware, I think it just falls down in that we put a message out, going back to lunch breaks, to try and avoid, putting those meetings during it, and keeping it free between 12 and 2. And it was a really good idea. And everyone agreed it was a really good idea. But then, of course, we've got some external consultants, companies that are working for us. And of course, it doesn't reach those people. So it was very short lived."

Participant 7

Moreover, participants also flagged that when considering the specific area of out of hours mobile ICT demands, there was less awareness around potential consequences, or proactivity around managing these.

Concerns were also raised that positive work-life balance initiatives might inadvertently have negative consequences elsewhere. For example, the flexible hours worked by some employees (e.g. working in the evening to accommodate caring responsibilities at other times) could be used as a justification by managers to avoid proactively managing out of hours demands. In effect, the conflict of offering flexibility in working hours, while supporting colleagues to avoid the negative impact that the resultant email traffic may bring, could present too much for an obstacle for some organisations. This partly links to a further risk identified by the group - misidentification of the problem by those implementing the solution. Some participants flagged that the mobile technology itself is not the problem, but rather the individual and organisational expectations, behaviours and thinking patterns that the technology brings. While some technology-based solutions may be of assistance (e.g. silencing notifications), there is a risk that the organisations focus solutions primarily on the technology (e.g. blanket email bans), rather than focussing on the underlying attitudes or behaviour that create the demands.

Participants also flagged the need for sustained commitment of all parties. There is a risk that users of the toolkit may lack the long-term engagement with goals that are initially identified, and consider the problem 'fixed' if they are able to facilitate short term behavioural change. Finally, participants highlighted that the toolkit will have limited impact if individuals are in denial about aspects of their own behaviour and the harm this could be causing for themselves and others. Therefore, individuals'

self-awareness and openness to challenge (potentially supported by the toolkit) will be a key success factor, as will the extent to which individuals are operating within an environment in which open and candid feedback is welcomed.

3.3.6. Time 3 Results (Research Consortium Presentation & Survey)

Feedback provided by attendees at the Research Consortium generally showed a strong positive response. Attendees recognised that there was a need for such a resource, given the pressures they observed across their own organisations in managing out of hours demands. They fed back that this was a frequently discussed issue, for which there were relatively few resources to support employees in this area. To this end, they were positive about the availability of the toolkit, and noted that it was important that it had been developed using an evidence-based approach. There was positive feedback for the flexible structure of the resources, given the need to adapt these for individual preferences, although they flagged that the relative success of using the toolkit would be contingent on the support of both line manager and the full team. From the subsequent survey, only one response was received, which clearly limits the generalisability of the findings. However, the respondent (a wellbeing lead for a government department) provided positive feedback on the degree to which the toolkit would raise awareness around potential negative impacts. The respondent also strongly agreed that the toolkit would help both employees and leaders take positive steps to help minimise the potential negative impacts. The respondent also emphasised the importance of using the individual component of the toolkit in conjunction with the leader / HR component.

4. Discussion

4.1. Overview

This research set out to co-design a prototype toolkit for minimising the negative impact of out of hours demands, and to assess the feasibility of implementing this in organisational contexts. Given the potential harm resulting from out of hours mobile demands, the goal of the research was to develop and test a consolidated set of resources to support employees and managers. These resources would aim to raise self-awareness, and challenge both employees and managers to take action where needed. The research was anchored in a recognised intervention design methodology (co-design), and the relative effectiveness of this design approach in this context has also been evaluated.

4.2. Consideration of Findings

The study has made a number of contributions. Firstly, it has provided further supportive evidence of the potential negative impacts that out of hours mobile ICT demands can have on individuals. Participants recognised the flexibility and benefits that can be derived from mobile technology - for most participants, the use of mobile technology was an important facilitator in delivering the requirements of their role. However, the evidence gathered supports the conclusions of previous studies – i.e. that a range of negative outcomes can arise for the individual themselves, their personal / family life, and their workplace relationships and performance.

Secondly, it has shown that it is feasible to develop a toolkit that aims to provide individuals and organisations with resources for managing the negative impact of out of hours ICT demands. A prototype toolkit has been co-designed through the study. This has drawn together a range of findings and theory from previous research (collated through Study 1), and has combined these with the outputs of the co-design process. This has resulted in a set of flexible resources designed to assist individuals, leaders and HR professionals in mitigating these potential negative impacts. The feedback from participants following review of the prototype toolkit was generally positive. Participants believed that the toolkit had the potential to raise self-awareness, act as a diagnostic tool, and facilitate goal setting around behavioural change. At a basic level, the toolkit was also seen as having a role to play in simply raising awareness of the risks in this area. This was seen as an important foundation on which an effective team / organisational intervention would need to be built. Participants highlighted that the evidence-base around potentially harmful effects of out of hours demands is not widely known or understood, neither by employees nor by senior stakeholders who are influencing organisational culture and behavioural norms. The dissemination of this knowledge through the toolkit therefore has the potential to act as a stimulus (or challenge) for behavioural change at an individual, team and organisational level. It is important to note that these conclusions are based on feedback from participants' review of the toolkit materials, and would require further empirical evaluation to draw firmer conclusions about the relative efficacy of the toolkit.

Thirdly, the study has reinforced the conclusion that the impact of out of hours mobile ICT demands is influenced by a complex array of factors at individual, leadership, organisational and societal level. These factors will, in turn, have a direct bearing on the relative success of any intervention which is designed to support individuals in managing these negative effects. These factors have been summarised in the prototype toolkit, and include both practical, technological aspects (e.g. flexibility

of device settings) and cultural and behavioural aspects (e.g. the openness of dialogue, and the extent of leadership support).

Linked to this, the study has emphasised the importance of structuring any interventions around a clear model of behavioural change. In this instance, the Behavioural Change Wheel (Minchie et al, 2011, see Figure 2), has been used as the primary reference point. The success factors and potential barriers identified through the research have shown that the implementation of the toolkit will need to be supported through systematic analysis of the organisational context, and implementing targeted changes to support the intervention at the behavioural, intervention function and policy levels. For example, at the behavioural level, Michie et al. (2011) refer to individuals' capability (psychological and physical), opportunity (social and physical), and motivation (automatic and reflective) to change the relevant behaviours. Any future interventions would need to focus on the facilitators and barriers in each of these areas. For example, if fixed corporate settings on mobile devices mean that employees do not have the physical capability to adjust their notification settings out of hours, this is likely to have a detrimental impact on their ability to effectively manage boundaries. Conversely, if flexibility of mobile device settings is granted, it reflects the previous findings of Pfaffinger et al. (2020) – i.e. that the provision of *technostress inhibitors* can moderate the negative impact of ICT stressors on individual wellbeing. In terms of social opportunity, if the socio-normative context of the organisation is one of working long hours, this is likely to have a significant influence on employees' decisions relating to their own out of hours behaviour (Schlachter et al, 2018). Moreover, the socio-normative context is also likely to have a bearing on individuals' perceived self-efficacy, which has been shown by Russell et al. (2021) to influence the success of WhIM behavioural change programmes around email usage behaviour. This will closely relate to the level of leadership and organisational support they receive in implementing their personal choices around boundary management (e.g. Park et al., 2020), and the extent to which there is genuine open dialogue between employees and leaders on these themes. The nine intervention functions within the Behavioural Change Wheel would all have a role to play, and many of these are referenced within the content of the toolkit (training, enablement, modelling, environmental restructuring, restrictions, education, persuasion, incentivisation and coercion). In addition, the Leader / HR guidance section offers considerations and strategy proposals for a number of the seven policy categories within the model relating to the systemic / organisational environment (Communication / Marketing, Environmental / Social Planning, Guidelines, Fiscal Measures, Regulation, Service Provision and Legislation). Onward development of the toolkit would help to build the links to each of these categories further.

Fifthly, the study has tested the use of a recognised intervention design model (co-design) in producing the prototype toolkit. The co-design framework proposed by Leask et al. (2019) provided an effective guide for operationalising a co-design process. For example, the procedural components specified within the framework acted as an anchor point for the requirements and purpose of each co-design stage. The feedback from participants indicated that the use of this participatory design approach has resulted in greater end user satisfaction and a higher quality intervention resource, in line with the earlier findings of Martin et al. (2005) and Crawford et al. (2002) respectively. While co-design has been used extensively to date in healthcare settings, its application in organisational psychology settings has been less common. The results here indicate that the benefits of co-design found previously in healthcare settings can also be realised through the co-design of organisational interventions. Participants used the period between Time 1 and Time 2 to reflect on their own out of hours practices and those of their organisation. This put them in a strong position to critically evaluate the toolkit content at Time 2, and this in turn helped to maximise the utility of the final outputs. Many of the comments made by participants at Time 2 showed that they had informally used some of the strategies within their own work context, and were able then to provide supplementary observations about their relative effectiveness and potential improvements. This meant that the iterative nature of the co-design method ultimately increased the practical relevance and depth of the evaluative data captured, as proposed by Leask et al. (2019).

Past research on co-design has primarily related to in-person activity. This research also tested the effectiveness of using co-design methodology in an online format, with participants geographically dispersed rather than meeting face-to-face. This had both benefits and drawbacks. The flexibility and accessibility of virtual meetings is likely to have boosted participant numbers (given the lack of travel time and cost), and also boosted the range of participants who were willing to engage in the co-design process. It enabled a busy, geographically dispersed sample to participate in the research, while requiring in-person focus groups could have precluded many of the sample from taking part. It also offered some practical flexibility in terms of the number and scheduling of focus groups. However, the online format is likely to have restricted some of the co-design activities, particularly the *interactive* procedural component highlighted by Leask et al. (2019). Generally, the online application of the co-design framework worked effectively, and showed that for geographically dispersed groups, a co-design approach via online meetings can still deliver benefits around end-user acceptance, particularly if practice guidelines for online focus groups are followed (e.g. Daniels et al, 2019).

4.3. Limitations of this study

The goal of the research was to test the feasibility of a co-designed prototype toolkit. While this outcome has been achieved, further work is required to develop the prototype toolkit into a fully functioning and systematically tested resource. Until that point is reached, it will not be possible to fully assess the full impact of the toolkit in reducing the potential negative impact of out of hours mobile ICT demands. Secondly, the evaluation of the prototype toolkit within this research has primarily taken the form of a critical practitioner review. This has helped to clearly signpost areas of strength and further improvement, and has given sufficient confidence that the concept warrants further development and full evaluation. Further systematic, longitudinal intervention research of the finalised toolkit is now needed. Thirdly, many of the individual strategies included within the resources have not previously undergone structured empirical evaluation themselves. Some of the strategies offer straightforward practical solutions – i.e. turning off device notifications, to minimise the risk that the individual is drawn into out of hours work. However, the extent to which such a strategy ultimately results in a decrease in the negative impact of out of hours demands has yet to be fully evaluated, and the picture is likely to be more complex and nuanced. For example, Pielot and Relot (2017) found that some individuals experienced increased levels of anxiety when notifications were turned off, if they knew that work-related issues may be unfolding without their awareness.

Fourthly, the participants within this study were a self-selected group, some of whom are likely to have been attracted to the research due to their prior interest in the negative impact of out of hours demands. Importantly, there was a range of segmentation preferences evident within the group, and also a wide range of perceived telepressure experienced by different group members. This gives some reassurance about the generalisability of the findings. However, the group who volunteered may have been more naturally inclined to see the issue of out of hours mobile demands as being an important area in which further action is warranted and necessary. As the majority of the participants were primarily knowledge workers, it would be important to establish the generalisability of these findings in broader sectors through further empirical testing.

Fifthly, while additional evidence was gathered around the potentially harmful effects of out of hours demands, it is recognised that this was a secondary aim of the study. Consequently, these reported negative impacts were not explored in detail in this study, and at times related to observations that participants made about colleagues' behaviour, rather than their own experiences. As such, some caution needs to be taken when interpreting these findings, and further ongoing focussed and systematic research around the negative impacts continues to be needed.

4.4. Implications for Future Research

The study has highlighted a range of areas warranting further research. Firstly, there are clearly many factors influencing the impact of out of hours mobile technology demands, which have a nuanced and complex interrelationship. Significant progress has been made over the past decade in understanding these, but further research is required, particularly to understand the interaction between different variables (for example, level of leadership support, degree of employee self-efficacy, and the resultant impact of out of hours demands and employee wellbeing). Secondly, while this study has developed an initial library of strategies and resources for mitigating these impacts, such a collective resource will need further development as the evidence base grows, and as the functionality of mobile technology continues to advance.

Thirdly, a more detailed systematic evaluation of the toolkit is needed to determine the extent to which it genuinely achieved its intended outcomes – i.e. reducing the negative impacts of out of hours mobile ICT demands. Ideally, this should include measurement and tracking of employee behaviour (e.g. the frequency and type of out of hours activity), as well as self-report measures. Yamada et al. (2015) conducted a systematic review of the effectiveness of healthcare-related toolkits for integrating evidence into clinical care. Unsurprisingly, they found that the success of toolkits in achieving intended outcomes rested upon the toolkit content being informed by high quality evidence and theory, and subsequently using rigorous design studies to explain underlying success factors in implementation. The long-term success of this toolkit in achieving successful outcomes is therefore likely to be contingent on the completion of more detailed and systematic evaluation. This reflects to the growing demand for research specifically relating to implementation (e.g. WHO Guidance on implementation research - Peters et al., 2013), and the need to systematically assess the strategies needed to effectively deliver a new intervention. Ideally, such research would also provide granular evaluation of the relative effectiveness of the different strategies within the toolkit in changing behaviour and ultimately improving wellbeing. In considering such evaluation research, the assertion by Russell et al. (2021) around required outcomes is also key – i.e. that work-related habits are not necessarily 'good' or 'bad', and therefore habit change in itself will not be sufficient to determine whether an intervention has been successful. In line with this assertion, Russell et al. (2021) gathered outcome data on wellbeing and relevant work-goal attainment. In this context, it would be important to demonstrate that future interventions around out of hours mobile ICT usage have a clear and beneficial impact on individual wellbeing, as well as simply modifying the frequency and type of out of hours mobile ICT demands.

Fourthly, while this study drew from a general population, some sector differences are well recognised. The pervasiveness of out of hours demands in sectors such as the law, finance and consulting suggests that these sectors may benefit from further targeted enquiry. It will also be important for future research to distinguish between professions where expectations of extended working hours are well established, and those which have seen a recent post-pandemic shift towards home/hybrid working (often with additional out of hours activity, but without commensurate financial compensation).

4.5. Implications for Future Practice and Policy

The study has highlighted a number of considerations around future practice and policy. Firstly, the toolkit was seen by participants to have value, and has the potential to be an important resource for HR practitioners, consultants, managers and employees. It has a role to play in increasing understanding around potential negative impacts of out of hours mobile ICT demands, but also in raising self-awareness in employees and managers around their current behaviours, the drivers and potential impact of these. It can also support the development of individualised strategies to facilitate any required behavioural changes. In this regard, the toolkit (or selected components) could be used in a range of organisational applications. For example, the toolkit could be used during initial onboarding or annual reviews, to give both employee and manager a clearer mutual understanding of preferred working styles, and the extent to which existing team expectations and culture align with these. The toolkit could also be used as a resource in one-to-one coaching, with the coach facilitating the process of goal-setting, and then holding the coachee to account in terms of progress towards these goals. It could also be used in leadership development, in helping leaders reflect on how their own approach to out of hours behaviour and expectations may either support or adversely affect the wellbeing of those they are leading.

Secondly, as outlined above, it is likely that the toolkit will only deliver long-term behavioural change if considered as part of a wider behavioural change intervention. It will be equally as important for practitioners, as well as researchers, to recognise these implications in the design of any consultancy interventions around out of hours mobile ICT demands, and fully consider the range of behavioural change factors outlined by Michie et al. (2011). The overall picture showed that sustained leadership role modelling and an organisational willingness to make tough decisions to minimise out of hours intrusion (e.g. through policy, and genuine commitment for behavioural change across the organisation) will be important success factors for systemic change. While the toolkit includes links to resources on organisational culture change, delivering sustained benefits across an organisation is

likely to require an accompanying 'top-down' initiative to create (or reinforce) an organisational culture that is genuinely supportive of employees' wellbeing. In practical terms, successful use of the toolkit may also require leaders to tackle wider problems surrounding volume and sustainability of workload, individual job design, and client expectation management. Leaders will also need to see past short-term pressures in order to tackle these systemic issues, which (if left unmanaged) could ultimately lead to employee burnout and sickness absence (Barber and Santuzzi, 2015). There will also need to be a culture that facilitates honest dialogue between leaders and employees around expectations, and an appreciation of why variation in practice will be needed between different individuals. Organisations will also need to consider how policy can be used effectively. For example, the participants in this research identified the need for organisations to create a collective agreement on the relative importance of different communication channels (e.g. if relaying an urgent message out of hours), and this reflects the hierarchical approach to boundary management described by Cousins and Robey (2015). Care will need to be taken in the drafting of organisational policy, to ensure that it has sufficient clarity to guide expectations and behaviour, while having sufficient flexibility to allow individual employees the latitude to implement their preferred approach to boundary management. Professional bodies may also have an important role to play in terms of raising awareness around potential negative impacts, and promoting the research evidence that will help organisations in developing effective policies and solutions.

Thirdly, there is clearly a tension between designing a toolkit that is flexible enough to be used across different individual preferences, organisational cultures, and working practices, while at the same time retaining a level of specificity and relevance for users. This links to the previous findings of Mudge et al. (2020), who identified a trade-off between the extent to which a toolkit is designed for flexible use, and the resultant level (or lack) of clarity that practitioners have around operationalising the toolkit. Moreover, Yamada et al. (2017) highlighted concerns around the lack of an accepted definition within past research of what actually constitutes a toolkit. In the current research, the effective operationalisation of the toolkit may require sector-specific adaptations to account for differing working practices and expectations, to ensure it retains its relevance and face validity.

Fourthly, many of the behaviours and thinking patterns targeted by the toolkit are likely to be relatively embedded, both at an individual and at an organisational level. The research highlighted that out of hours work facilitated by mobile devices is also likely to be habitual in nature. Employees may feel an implicit or explicit pressure to engage in out of hours working, but this will also be driven by embedded behavioural patterns – e.g. routinely checking messages during out of hours periods. In this context, the theory around habit change in usage of mobile technology is important. Further evidence will be key to build on the important findings of Russell et al. (2021) around the application

of habit change interventions such as WhIM, and the most effective ways of operationalising these in organisation-wide initiatives. In this study, the toolkit provided the user with a framework for understanding their current behaviour, the reasons why their behaviour may need to change, and goal-setting for future behavioural and habit change. This reflected the requirement of the WhIM model to reset individuals' *intentions* around habit-based behaviour. Within this context, it would be important to understand the degree to which the specification of these intentions does indeed result in behavioural change over time, and how any potential facilitators (e.g. external accountability through coaching or line management support) may affect these outcomes. If employees are recognising that they have addictive patterns of self-driven out of hours device checking, and are seeking to change this, then use of the cognitive-behavioural therapy techniques described by Koo (2011) are likely to be an important further intervention. Ultimately, without sufficient self-regulation and resources on the part of both individuals and leaders, the behavioural change is far less likely to continue long term (Kwasnicka et al., 2016), leading to reversion to past habits around out of hours activity.

For individuals, the norms of the team or the organisation are likely to become intertwined with the individual's perception about the norms of that team, profession or sector (e.g. Social Identity Theory, Tafjel, 1978). At an individual level, it was notable that some participants saw out of hours activity as an intrinsic aspect of their core professional values (i.e. being seen as responsive and hard-working). At a broader level, this relates back to the findings of Choroszewicz and Kay (2020), who observed struggling segmentors who experienced ongoing difficulties operating outside of the long working hours culture within the legal profession. Such behaviour, practices and attitude will require sustained challenge, particularly if they are perpetuated by the leaders of the organisation routinely role modelling out of hours availability. At an organisational level, an 'always on' attitude may be a default, if implicit expectation. For example, a commercial organisation that has international clients across different timezones, which is operating in a fast-paced business sector, may be reliant (whether implicitly or explicitly) on employees checking emails out of hours to monitor and manage emerging issues or client leads. Such assumptions and cultural expectations, if embedded, are likely to require significant 'unfreezing' in order to facilitate effective outcomes from the toolkit.

Change at an individual level will require a degree of personal insight and awareness of the factors (intrinsic and extrinsic) that are contributing to the problem. The evidence indicates that the toolkit can be successful in raising individuals' personal awareness and insight into i) the extent of their out of hours activity, ii) the factors that are influencing this activity and iii) the personal steps that would be required to realign the level of out of hours activity if needed. However, the degree to which genuine change is possible will ultimately be contingent on the extent to which the individual is able

or willing to free up sufficient time to truly engage with the toolkit. There is a risk that those individuals who may benefit the most from the toolkit will be the ones who are so busy that they have the least opportunity or appetite to truly engage. This links back to the *recovery paradox* described by Sonnentag (2018) – i.e. those exposed to high levels of stressors will have the highest need for recovery, yet may have the least opportunity to achieve it.

This highlights the role that leaders will need to take in terms of role modelling, and also supportively challenging employees to use the toolkit to support any change in their working practices needed. Such a standpoint may initially conflict with immediate business imperatives, and ultimately this will require leaders to prioritise long-term staff wellbeing and work-life balance ahead of short-term business demands.

5. Conclusions

There is an increasing need for employees and leaders to have an awareness of the potential negative impact of sustained out of hours demands, and to have resources which will assist in tackling this. The findings of this study show that the development of a toolkit for managing the negative impact of out of hours mobile ICT demands is both feasible and of value to potential users. The development of this prototype toolkit provides one step in this journey – further development and empirical testing of the resources will be necessary to maximise their future success. The research has also identified a range of key success factors for any future interventions, and it is clear that meaningful change will be contingent on the use of a recognised behavioural change model. It will also require open, honest dialogue and sustained commitment from the individual and leaders within the organisation.

Chapter 5: Conclusions

1. Overview

The purpose of this final chapter is to draw together the overall findings of the thesis, considering both the SLR and the empirical study, in order to gain a coherent understanding of the overall contribution.

The context within which the thesis was completed was one of rapid change. Firstly, the recent advancements in mobile technology have led to significant changes in the daily patterns of working life. These are evident both in terms of flexibility of working practices, and also in terms of the immediacy of out of hours access to work, through mobile technology. This has created some new expectations around availability and flexibility, which have brought both opportunities and challenges. Secondly, the research was conducted during and shortly after the lockdowns resulting from the 2020 COVID pandemic. These brought about further significant changes in working practices, particularly in terms of how individuals use mobile technology to support flexible working, and the further blurring of boundaries between work and non-work life.

The thesis firstly aimed to assess the evidence around strategies and interventions that are available to minimise the negative impact of out of hours mobile ICT demands. Secondly, it aimed to co-design a toolkit to support the aim of minimising these negative impacts, and to test the feasibility of implementing this within organisations.

2. Overall Findings

It is clear that mobile technology has had a fundamental impact on the way in which work is conducted. Study 1 showed that aspects of the evidence base have not kept pace with the rapid evolution of our working practices. Boundaries between home and work are routinely blurred. While technology has facilitated these changes, the technology itself cannot be seen as the root cause. The negative impacts described by the research primarily arise from individual and collective behaviour and thinking that arises as a result of the technology being available.

Schlachter et al. (2018) identified that the out of hours use of mobile ICT is not inherently good or bad, but its impact will rest upon aspects such as socio-normative organizational context, job-related characteristics, and personal characteristics. There are many instances in which mobile technology

can support flexible working, and there was evidence of benefits it can provide in both Study 1 and Study 2. However, past research has identified a range of evidence around potential negative effects of out of hours demands. The feedback from Study 2 indicated that awareness of these potential effects is not widespread, and Study 1 has shown that relatively few structured interventions have been developed to combat these effects. The changes in work-related mobile ICT use over recent years have been relatively rapid, but arguably the accompanying changes to working practices have progressed subtly over time - a gradual, often unspoken, shift in availability expectations and workplace norms. While Study 2 participants recognised that having extensive out of hours demands was not ideal, a notable proportion also recognised that their out of hours working practices had gradually evolved without them being fully conscious of this change over time. They described how participating in the research had provided the opportunity to temporarily step back from working life, and reflect on the potential impact that out of hours commitments might be having on them. As such, they described this as being an important and instructive exercise.

The focus of this research is set against a context of increasing global competition and job insecurity (e.g. Yam et al., 2022). Past research has shown that job insecurity can lead to employees adopting more permeable boundaries between work and home, resulting in reduced wellbeing (Boswell et al., 2014). This emphasises the importance of raising awareness of potential harmful effects of out of hours mobile ICT demands, and of having a practical set of resources to support individuals and managers in effectively mitigating these effects.

Study 1 concluded that, to date, there has only been relatively limited systematic evaluation of strategies and interventions designed to mitigate these negative effects. It also showed that the specification and description of these strategies is often lacking in detail. This represents a significant gap in our current understanding. Many strategies have been proposed by past researchers, ranging from individual actions to national legislative changes. Moreover, the past evidence shows that individual differences (e.g. in perceived telepressure or segmentation preferences) mean that a one-size-fits-all solution will be neither appropriate nor effective in tackling these challenges. Different combinations of strategies will be required by individuals depending on their unique circumstances and preferences. Building on the findings of Study 1, Study 2 sought to co-design a toolkit to support this aim. The prototype toolkit was co-designed with the input from participants from a range of professional backgrounds. The resultant toolkit was generally seen by participants to be effective and valuable, in line with the intended outcomes of the co-design methodology (e.g. Martin et al., 2005). A range of success factors and barriers for effective implementation were identified, as were future design improvements for the toolkit.

3. An integrated framework for mitigating the negative impact of out of hours mobile ICT demands

To draw together the findings of the overall thesis, Figure 4 presents an integrated framework for mitigating the negative impact of out of hours mobile ICT demands. This is intended to provide a holistic reference model, for use by both researchers and practitioners seeking to undertake future interventions around out of hours demands. It includes contextual and individual considerations, the potential negative impacts of out of hours mobile ICT demands, proposed strategies for dealing with these negative impacts, the core functions of an intervention, and the required success factors for implementation of the intervention. The implications for future research and practice will be considered in the context of the five components of this model.

Figure 4 – An integrated framework model for mitigating the negative impact of out of hours mobile ICT demands

4. Implications for Future Research

The model, and the findings of the overall thesis, have a number of implications for future research. Firstly, such research will need to continue to improve our understanding of the intrapersonal and interpersonal factors that are influencing out of hours demands and their impact. Figure 4 (Column 1) shows the broad range of **individual** factors identified - these include level of self-awareness, segmentation preferences, career context, professional identity, levels of self-discipline, locus of control etc. The thesis has found that all of these are likely to have an influence on both the volume and impact of out of hours demands, and there are also likely to be interactions between these based on the initial findings of these two studies (e.g. those early in career may have less of a sense of agency around controlling out of hours demands). This relates to the earlier findings of Duxbury et al. (2014) and Russell et al. (2021) that highlighted the role that individuals' self-efficacy / sense of agency have on the relative success of outcomes. Each of these variables warrant further attention in future research.

Secondly, in terms of contextual and interpersonal factors (Figure 4, Column 1), these include a range of broader trends around working practices (increased globalisation and out of hours contact, the proliferation of different communication platforms, response expectations, longer working days, increased reliance on email, and increased job insecurity). As highlighted by Schlachter et al. (2018) the socio-normative context of the organisation and sector will play an important role in influencing individuals' out of hours behaviour, and this in turn is likely to be driven by prevailing global working practices and economic conditions. All of these will have an impact on the organisational and team culture within which individuals work, which in turn will influence the pressure that individuals experience to remain available out of hours (e.g. van Zoonen et al., 2021). It is important that our understanding of the macro, contextual variables that influence out of hours demands continues to grow. This will help ensure that future interventions can be increasingly adaptive, relevant and targeted towards specific working contexts.

Thirdly, the range and complexity of mobile technology platforms used by organisations continues to evolve rapidly, which has a number of implications for future research. It is important that future research continues to focus on the leading edge of how mobile technology is being deployed in organisations. The informal 'hierarchy' of communication channels reported by participants warrants further research, in line with the hierarchical approaches to boundary management identified by Cousins and Robey (2015). In particular, it would be of value to assess the effectiveness of either informal or formal protocols which establish the communication channels that should be used for any urgent out of hours communications. Given that participants in this research have

reported the pressure associated with monitoring multiple channels of possible out of hours contact, it is likely that clear strategies in this area will be increasingly important as the range and complexity of communication channels continues to expand.

The thesis has shown that there is relatively limited structured evaluation of the strategies that have been proposed in previous research (Figure 4, column 3). In the specific area of out of hours mobile ICT demands, Schlachter (2017) was the only longitudinal intervention study found, although there are notably intervention studies in closely related fields (e.g. work-related email habits, Russell et al., 2021). It will be important that future research systematically evaluates the relevant effectiveness of the strategies identified in reducing negative impacts – from the most basic (e.g. turning off device notifications) to national legislative interventions (e.g. the 'right to disconnect' legislation). As seen in Study 1, many studies to date have used a self-report, diary design. To gain a deeper understanding of outcomes in such research, it is recommended that objective, quantitative measures should be employed more often in future research. This will provide richer data on the volume, frequency, modality and type of out of hours demands that employees are facing. Such data is increasingly accessible, albeit care would need to be taken on who has access to this and how it is used. Usage data would provide a valuable addition to the diary-type self-report measures which have been primarily used in research to date. Furthermore, the metrics used for capturing concepts such as segmentation, telepressure etc would benefit from further review. Further details of these measures can be found in Appendix A. The measures used in research to date have tended to be relatively short, four to six item measures. While these have usually been shown to have acceptable reliability, it is questionable whether such a brief questionnaire can validly measure the nuanced and complex aspects of these concepts, particularly given the increasing technological complexity of the modern day workplace.

The strategies available are also rapidly evolving. Recent technological developments to assist employees in managing boundaries have broadened the options available to employees for proactive boundary management (e.g. the 2021 introduction of focus modes across Apple and Android devices to manage notifications, the incorporation of employee wellbeing and productivity tools into common software platforms – e.g. Microsoft introducing Viva in 2021). It is important that future research incorporates these increasingly sophisticated boundary management tools, and evaluates their effectiveness in minimising negative impacts and raising individuals' level of self-awareness about their own working patterns and habits. Certainly, without continual progress in research and practice to match the pace of technological change, there is a risk of obsolescence in terms of both past research findings, and the content of a resource such as the toolkit developed within this thesis.

The key research priority for the toolkit intervention developed through this thesis (intervention functions – Figure 4, Column 4) would be to systematically evaluate its use in a longitudinal intervention study. Such an approach would allow for objective evidence on the extent to which it will make a genuine difference to both the level of out of hours demands, the negative impacts arising from these, and relevant well-being measures. As emphasised by Peters et al. (2013), such research would need to actively monitor and assess the broader success factors, and the extent to which these are influencing the effectiveness of implementation. This will be key to assisting practitioners understand the areas of focus requiring their attention in the future, ensuring that these are actively managed alongside the use of the toolkit itself. It will also be important that future organisational research in this area maintains sight of the broader developments around inter-related subjects such as smartphone addiction in a non-work context, as well as broader theory and practice around employee wellbeing interventions.

Finally, the co-design methodology has been applied in this thesis, which has helped to ensure that end users' views have been integral throughout the design of a toolkit. The thesis also tested how the methodology can be used while working in an online group format. As Slattery et al. (2020) observed, the level of structured empirical evaluation of the co-design approach to date has been relatively limited. While qualitative evaluation of co-designed intervention materials have generally been positive to date, there is a need for further systematic longitudinal evaluation of the impact of interventions that have been co-designed.

5. Implications for Practice and Policy

This study has produced a prototype toolkit, which provides a platform for understanding the content, format and presentation approach for an effective intervention. There is clearly further work needed to develop and refine the content and structure of the toolkit. The rapidly evolving nature of technology also means that regular updates to the toolkit would be required. Consideration would need to be given to the benefits of adapting the toolkit content to different working contexts. For example, the contextualisation and exercises included are likely to vary markedly between shift-workers in a high risk industry (with on-call arrangements) compared to an office employee working standard office hours. This now requires further development in each of these areas to ensure that it is as relevant and engaging as possible across a broad range of potential audiences.

The implementation success factors (Figure 4, Column 5) will be a key consideration for any future interventions in this area. In basic terms, questions may need to be asked on the extent to which out of hours demands are routinely arising simply because of the sheer workload that employees are being exposed to. Critically, there will also need to be a consistent, sustained commitment from the part of senior leaders and managers within the organisation to recognise the potential harm arising from sustained out of hours demands, and a conscious decision to proactively tackle this issue within their own organisation. It should be noted that senior leaders may be reluctant to fully commit to this type of initiative, if they are under pressure to deliver competing demands. For example, in a healthcare environment, Quirk et al. (2018) found a reluctance amongst senior leaders to commit to workplace wellbeing initiatives when there were staffing pressures, financial limitations and perceived greater spending priorities. In particular, senior leaders will have to be convinced of the tangible benefits of committing to such an initiative, particularly when the short term impact might be seen as decreasing the responsiveness and the agility of the organisation. This links to the risks around lack senior leadership buy-in observed by Pansu (2018) in the delays to implementing the 'right to disconnect' legislation within organisations in France. The slow progress observed in Pansu's research was attributed to the perceived negative impact on short-term profitability and performance. As with many wellbeing initiatives, the financial business case may not be immediately apparent, and may require a longer-term leadership vision to fully appreciate the importance of tackling the challenge.

Alongside leadership commitment, success in minimising negative impact will also require behavioural change, self-awareness and sustained motivation on the part of the individual. Russell et al. (2021) provide important insights into how interventions such as the WhIM model can help to bring about sustained behavioural change in this area. The need for individualised approach to identifying appropriate strategies was highlighted in both Study 1 and Study 2. This will require nuanced HR policies and line management skills. At times, inflexible HR policies across a workforce can be introduced under the banner of ensuring equality of treatment of all employees. While flexible working practices have made significant in-roads into recognising the need for individualised solutions, delivering such solutions can present some practical leadership challenges, particularly when there are widely different approaches to boundary management between different team members. It was clear from both Study 1 and Study 2 that there is a balance to be struck. Support to reduce out of hours demands should not inadvertently restrict employees from using the flexibility that mobile technology offers to create a work-life balance that is right for them. However, leaders will also need to recognise the tensions that this can produce – i.e. an employee with childcare

responsibilities working flexible hours sending emails in the evening, which is then perceived by another employee as imposing an out of hours demands upon them.

The increased availability of extensive employee data around out of hours activity (e.g. through Microsoft Viva) presents both opportunities and ethical dilemmas for organisations. On the one hand, monitoring data around out of hours mobile ICT activity could be used by organisations to identify and support those employees who are routinely working out of hours excessively. However, the availability of such data could mean that less scrupulous employers use it to reward those who are seen as going the 'extra mile' through working excessive hours. Moreover, any overbearing monitoring of behaviour is likely to undermine employees' sense of autonomous decision making and individual control in the role, and in turn undermine their intrinsic motivation (e.g. Ryan et al., 2021). Holt et al. (2017) found that organisations that conduct high monitoring of employee data were consistently rated as having poor ethics by employees. It is notable that for systems such as Microsoft Viva, there are limitations around the extent to which personal data relating to out of hours activity (which is presented to the individual) can be aggregated in the form of a corporate report. At an individual level, the use of such resources can be an important starting point to support the toolkit, in providing an objective analysis of when and how they are engaging in out of hours activity.

One of the significant themes to emerge from Study 2 was pressure for out of hours activity resulting from misalignment of expectations, particularly when employees may feel there is an implicit expectation for them to respond to messages out of hours. This is an area which would warrant further exploration, particularly in terms of the interpersonal and intrapersonal dynamics that result in individuals feeling pressure to monitor messages and remain engaged in work out of hours. In turn, this would help to identify communication strategies for managers and organisations to help minimise the risk of misaligned expectations having a negative impact on employees.

6. Conclusions

There have been rapid changes in mobile technology and its resultant impact on working practices in recent years – these have brought both benefits and costs. Research shows the risk of significant negative impacts arising from out of hours mobile ICT demands, unless these are proactively managed by both individuals and organisations. The thesis has shown that robust evidence around the relative effectiveness of proposed strategies for managing these demands is still limited. It has also shown that it is possible to co-design a toolkit for managing these negative impacts, which has

received initial positive evaluation from practitioners, in terms of raising self-awareness and enabling clear goal setting around behavioural change. The research has identified a range of success factors and potential barriers of implementation for an intervention of this type. Further research and practitioner support is needed on enhancing the detail and quality of such interventions, as well as gaining a clearer understanding of the complex array of variables influencing the success of implementation. The thesis shows that the toolkit has the potential to be a valuable and important component within future organisational interventions, although it is likely to be only one piece of the jigsaw in respect of achieving sustained behavioural change across an organisation.

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Appendices

Appendix A - Review of Measures Used in Studies Identified through SLR

a) Measures of Personal and Organisational Strategies / Coping Styles

A number of the quantitative studies used the same measures in their data gathering. The measure of **recovery experiences** developed by Sonnetag and Fritz (2007) was used (in full of part) by Barber et al. (2019), Derks et al. (2014), Derks and Bakker (2014), Eichberger et al. (2020), Pfaffinger et al. (2020) and Schlachter (2017). This measure includes four sections, relating to i) psychological detachment (e.g. "I distance myself from my work") ii) relaxation (e.g. "I do relaxing things") iii) mastery (e.g. "I seek out intellectual challenges") and iv) control ("I determine for myself how I will spend my time").

In terms of other measures of strategies deployed, these included the **coping strategies** scale (Carver, 1997) adapted by Gaudioso et al. (2017) and Eichberger (2020) for use in ICT contexts. Gaudioso at al. (2017) found through item factor analysis two main clusters of coping strategies – those which were adaptive (i.e. problem focussed – dealing directly with problem, seeking technical support, planning etc.), and those which were maladaptive (or dysfunctional – i.e. denial, disengagement and venting frustration). Eichberger et al. (2020) used a combination of items from the brief and long COPE scales (Carver, 1997; Carver et al., 1989 respectively), to measure the constructs of planning, acceptance, and positive reframing.

A 12 item **technostress inhibitor scale** (Ragu-Nathan et al., 2008) was used by Pfaffinger et al. (2020), which provided a measure of the extent to which the organisation i) facilitates technological literacy amongst employees, ii) provides technical support for employees iii) actively involves end users in the introduction and use of new technology. A three item scale for **personal boundary control** (Kossek et al., 2012) was used by Park et al. (2020), which included items such as "I control whether I am able to keep my work and personal life separate". A six item measure of **ICT-related self-control** (Al-Dabbagh et al., 2015) was adapted by Schlachter (2017), which included items such as "outside of work, I am good at resisting temptations to check my work-related inboxes outside my working hours". Park et al. (2020) adapted the four item **family supportive supervisor behaviour** scale developed by Hammer et al. (2013) to focus specifically on school principals' supportive behaviour. This included items such as "Your principal works effectively with teachers to creatively solve conflicts between work and nonwork".

b) Measures of telepressure, work home interference, appraisal and external boundary expectations

The six item measure of **telepressure** developed by Barber and Santuzzi (2015) was used by Barber et al. (2019) and Pfaffinger et al. (2020). This focussed on both an individual's ***preoccupation*** with work-related message-based technology (e.g. "It's hard for me to focus on other things when I get a message from someone"), and the individual's ***urge*** to engage (e.g. "I feel a strong need to respond to others immediately").

Other measures used included the SWING survey of **work home interference** (Guerts et al., 2005; used by Derks et al. 2014; Derks & Bakker, 2014), a three item measure of **work family conflict** (Matthews et al., 2010; used by Barber et al., 2019), and the scale for work family conflict developed by Adams (1996) (used by Gaudioso et al., 2017). Park et al. (2020) adapted the **boundary expectations** scale (Piszczek, 2017), to measure the perceived parental expectations for teachers to engage with after-hours communication (e.g. "Parents expect me to check for electronic communications when I am off work"). Park et al. (2020) also used a three item scale developed by Binnewies et al. (2012) for measuring communicative boundary tactics (e.g. "I have come to an agreement with my work-related people when they can contact me outside working hours".)

Eichberger et al. (2020) used measures of **primary appraisal** (i.e. how harmful a job stressor is perceived to be for an individual's well-being) which were adapted from Almeida et al. (2002) (e.g. "How much do situations where you use technological devices for work purposes after hours risk your well-being and your physical health?"). They also used a measure of **secondary appraisal** (i.e. self-efficacy, and the availability of coping resources) adapted from Schwarzer and Jerusalem (1995) (e.g. "I can always manage to solve difficult problems if I try hard enough."). Barber et al. (2020) measured **satisfaction with work life balance** through a 5 item measure developed by Valcour (2007), and also used a six item measure of **work life balance effectiveness** (Carlson et al., 2009).

c) Measures of ICT Usage and Workload

Smartphone usage was measured using the Derks and Bakker (2014) **smartphone intensive usage** scale (as used by Derks & Bakker, 2014 and Eichberger et al., 2020). This included items such as "When my smartphone blinks to indicate new messages, I cannot resist checking them". The measure of **ICT demands** developed by Day et al. (2012) was also used by Park et al. (2020).

d) Measures of Individual Outcomes

A range of further measures were used across the studies to measure outcomes such as **negative work rumination, insomnia, negative affect, sleep quality, work exhaustion, evening affect, morning vigour, and state burnout**. Details of these can be found in Appendix X.

Generally, the quality of scales was evaluated through the use of Cronbach's alpha coefficient, with the majority having a coefficient of at least 0.7.

Appendix B – SLR Quality Assessments

a) Quantitative Study Assessments (using Snape et al., 2019)

	Barber, L. ., Conlin, A. L., & Santuzzi, A. M. (2019)	Derks, D., & Bakker, A. B. (2014)	Derks, D., ten Brummelhuis, L. L., Zecic, D., & Bakker, A. B. (2014)	Eichberger, C., Derks, D., & Zacher, H. (2020)	Gaudioso, F., Turel, O., & Galimberti, C. (2015)	Gaudioso, F., Turel, O., & Galimberti, C. (2017)	Park, Y., Liu, Y., & Headrick, L. (2020)	Pfaffinger, K. F., Reif, J. A. M., & Spieß, E. (2020)
1. Was the evaluation well-designed?								
Fidelity: The extent to which the intervention was delivered with fidelity is clear - i.e. if there is a specific intervention which is being evaluated, this has been well reproduced.	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A
· Measurement: The measures are appropriate for the intervention's anticipated outcomes and population.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Participants completed the same set of measures once shortly before participating in the intervention and once again immediately afterwards	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A
An 'intent-to-treat' design was used, meaning that all participants recruited to the intervention participated in the pre/post measurement	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A
Counterfactual:								
Assignment to the treatment and comparison group was at the appropriate level (e.g., individual, family, school, community)	N/A	N/A	Can't Tell	N/A	N/A	N/A	N/A	N/A
The comparison condition provides an appropriate counterfactual to the treatment group. Consider:								
Participants were randomly assigned to the treatment and control group through the use of methods appropriate for the circumstances and target population OR sufficiently rigorous quasi-experimental methods (regression discontinuity, propensity score matching) were used to generate an appropriately comparable sample through non-random methods	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A
The treatment and comparison conditions are thoroughly described.	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A
2. Was the study carried out appropriately? including appropriate sample								
Representative: The sample is representative of the intervention's target population in terms of age, demographics and level of need. The sample characteristics are clearly stated.	Yes	Yes	Can't Tell	Yes	Can't Tell	Can't Tell	Yes	Can't Tell
There is baseline equivalence between the treatment and comparison group participants on key demographic variables of interest to the study and baseline measures of outcomes (when feasible)	N/A	N/A	Can't Tell	N/A	N/A	N/A	N/A	N/A
Sample size: The sample is sufficiently large to test for the desired impact. This depends most importantly on the effect size, however a suggestion could be e.g. a minimum of 20 participants have completed the measures at both time points within each study group.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

	Barber, L. K., Conlin, A. L., & Santuzzi, A. M. (2019)	Derks, D., & Bakker, A. B. (2014)	Derks, D., ten Brummelhuis, L. L., Zecic, D., & Bakker, A. B. (2014)	Eichberger, C., Derks, D., & Zacher, H. (2020)	Gaudioso, F., Turel, O., & Galimberti, C. (2015)	Gaudioso, F., Turel, O., & Galimberti, C. (2017)	Park, Y., Liu, Y., & Headrick, L. (2020)	Pfaffinger, K. F., Reif, J. A. M., & Spieß, E. (2020)
Attrition: A minimum of 35% of the participants completed pre/ post measures. Overall study attrition is not higher than 65%.	Yes	Can't Tell	Yes	Yes	Can't Tell	Can't Tell	Yes	Can't Tell
The study had clear processes for determining and reporting drop-out and dose. Differences between study drop-outs and completers were reported if attrition was greater than 10%.	Yes	Can't Tell	Can't Tell	Yes	N/A	N/A	N/A	Can't Tell
The study assessed and reported on overall and differential attrition	No	No	No	N/A	No	No	N/A	No
Equivalence: Risks for contamination of the comparison group and other confounding factors have been taken into account and controlled for in the analysis if possible: - Participants were blind to their assignment to the treatment and comparison group	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A
There was consistent and equivalent measurement of the treatment and control groups at all points when measurement took place.	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A
Measures: The measures used were valid and reliable. This means that the measure was standardised and validated independently of the study and the methods for standardization were published. Administrative data and observational measures may also have been used to measure programme impact, but sufficient information was given to determine their validity for doing this.	Yes	Yes	Yes	Yes	Can't Tell	Yes	Yes	Yes
Measurement was independent of any measures used as part of the treatment.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
In addition to any self-reported data (collected through the use of validated instruments), the study also included assessment information independent of the study participants (eg, an independent observer, administrative data, etc).	Yes	No	No	No	No	No	No	No
3. Was analysis appropriate?								
The methods used to analyse results are appropriate given the data being analysed (categorical, ordinal, ratio/ parametric or non-parametric, etc) and the purpose of the analysis.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Appropriate methods have been used and reported for the treatment of missing data.	Yes	No	No	Yes	No	No	Yes	No
4. Is the evidence consistent?								
Are the findings made explicit?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Is there adequate discussion of the evidence both for and against the researcher's arguments?	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Has the researcher discussed the credibility of their findings (e.g. triangulation, respondent validation, more than one analyst)?	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Are the findings discussed in relation to the original research question?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Total Yes	58.3%	41.7%	70.8%	54.2%	25.0%	37.5%	50.0%	37.5%

b) Qualitative Study Assessments (using Snape et al., 2019)

	Choroszewicz, M., & Kay, F. (2020)	Ciolfi, L., & Lockley, E. (2018)	Cousins, K., & Robey, D. (2015)	Duxbury, L., Higgins, C., Smart, R., & Stevenson, M. (2014)
1. Is a qualitative methodology appropriate?				
Consider:				
Does the research seek to interpret or illuminate the actions and/or subjective experiences of research participants?	Yes	Yes	Yes	Yes
Is qualitative research the right methodology for addressing the research goal?	Yes	Yes	Yes	Yes
2. Is the research design appropriate for addressing the aims of the research?				
Consider:				
Has the researcher justified the research design (e.g. have they discussed how they decided which method to use)?	No	No	Yes	Yes
3. Is there a clear statement of findings?				
Consider:				
Are the findings made explicit?	Yes	Yes	Yes	Yes
Is there adequate discussion of the evidence both for and against the researcher's arguments?	No	Yes	Yes	Yes
Has the researcher discussed the credibility of their findings (e.g. triangulation, respondent validation, more than one analyst)?	No	Yes	Yes	Yes
Are the findings discussed in relation to the original research question?	Yes	Yes	Yes	Yes
The following criteria should be considered for each study to be included in the review (ie, those for which the answers to all of the screening questions were "yes").				
4. Was the data collected in a way that addressed the research issue?				
Consider:				
Is the setting for data collection justified?	Yes	Yes	Yes	Yes
Is it is clear what methods were used to collect data? (e.g. focus group, semi-structured interview etc.)?	Yes	Yes	Yes	Yes
Has the researcher justified the methods chosen?	No	No	Yes	Yes
Has the researcher made the process of data collection explicit (e.g. for interview method, is there an indication of how interviews were conducted, or did they use a topic guide)?	Yes	Yes	Yes	Yes
If methods were modified during the study, has the researcher explained how and why?	Yes	Can't Tell	Can't Tell	Can't Tell
Is the form of data clear (e.g. tape recordings, video material, notes etc)?	Yes	Yes	Yes	Yes
5. Was the recruitment strategy appropriate to the aims of the research?				
Consider:				
Has the researcher explained how the participants were selected?	Yes	Yes	Yes	Yes
Have they explained why the participants they selected were the most appropriate to provide access to the type of knowledge sought by the study?	Yes	Yes	Yes	Yes
Is there are any discussion around recruitment and potential bias (e.g. why some people chose not to take part)?	Yes	Yes	No	No
Is the selection of cases/ sampling strategy theoretically justified?	Yes	Yes	Yes	Yes

	Choroszewicz, M., & Kay, F. (2020)	Ciolfi, L., & Lockley, E. (2018)	Cousins, K., & Robey, D. (2015)	Duxbury, L., Higgins, C., Smart, R., & Stevenson, M. (2014)
6. Was the data analysis sufficiently rigorous?				
Consider:				
If there is an in-depth description of the analysis process?	Yes	No	Yes	Yes
If thematic analysis is used, is it clear how the categories/themes were derived from the data?	Yes	No	Yes	Yes
Does the researcher explain how the data presented were selected from the original sample to demonstrate the analysis process?	No	No	No	No
Are sufficient data presented to support the findings?	Yes	Yes	Yes	Yes
Were the findings grounded in/ supported by the data?	Yes	Yes	Yes	Yes
Was there good breadth and/or depth achieved in the findings?	Yes	Yes	Yes	Yes
To what extent are contradictory data taken into account?	No	Yes	Yes	Yes
Are the data appropriately referenced (i.e. attributions to (anonymised) respondents)?	Yes	Yes	Yes	Yes
7. Has the relationship between researcher and participants been adequately considered?				
Consider:				
Has the researcher critically examined their own role, potential bias and influence during (a) formulation of the research questions (b) data collection, including sample recruitment and choice of location?	No	No	No	No
How has the researcher responded to events during the study and have they considered the implications of any changes in the research design?	Yes	Can't Tell	Can't Tell	Can't Tell
8. Have ethical issues been taken into consideration?				
Consider:				
Are there sufficient details of how the research was explained to participants for the reader to assess whether ethical standards were maintained?	No	No	No	No
Has the researcher discussed issues raised by the study (e.g. issues around informed consent or confidentiality or how they have handled the effects of the study on the participants during and after the study)?	No	Yes	Yes	No
Have they adequately discussed issues like informed consent and procedures in place to protect anonymity?	No	Yes	Yes	No
Have the consequences of the research been considered i.e. raising expectations, changing behaviour?	Yes	Yes	Yes	Yes
Has approval been sought from an ethics committee?	Can't Tell	Yes	Can't Tell	Can't Tell
9. Contribution of the research to wellbeing impact questions?				
Consider:				
Does the study make a contribution to existing knowledge or understanding of what works for wellbeing? e.g. are the findings considered in relation to current practice or policy?	Yes	Yes	Yes	Yes
Total Yes	66.7%	72.7%	78.8%	72.7%

Research into Managing Out-of-Hours Work Demands – Toolkit Development

Are out-of-hours work expectations increasing?
Does mobile technology make it more difficult to switch off from work?
Are you interested in ways of minimising the potential harm caused by out-of-hours expectations?

Background

Mobile technology has helped to transform our working lives, enabling ready and immediate contact across our professional networks. While such accessibility has clear benefits for individuals and organisations, there is growing research evidence that expectations of availability outside working hours can have a range of negative effects on employees.

As part of my Birkbeck professional doctorate in Occupational Psychology, I'm seeking participants to test the feasibility of a toolkit designed to help individuals and organisations minimise the potential harm caused by mobile technology out-of-hours demands.

Time Implications

As a participant you would contribute to two 2-3 hour online focus groups (in early February and April 2022), during which you would contribute to the co-design of a prototype toolkit. You'd first be introduced to the latest research findings in this area. You'd then be asked to draw on your experience of using mobile technology in your professional life to help shape and evaluate different strategies and resources to support employees and managers. Participants are welcomed from all organisations and sectors.

Benefits of Participating

- you'll gain a better understanding of the current research evidence around the potential impact of out-of-hours mobile demands, and options for mitigating their potential negative effects.
- You will help to develop practical resources (and the research evidence base) in this important area of employee well-being.
- You'll have access to the resources that are developed as part of the research, to use in the future at an individual or organisational level.

Further Details

The research has had full ethical approval from Birkbeck College (University of London), and is being supervised by Dr. Rachel Lewis and Dr. Jo Yarker. Full participant information is available here.

Contact

If you would be interested in contributing to the research, and for any further details, please do drop me a line at charlie.eyre@workspheres.co.uk

With thanks

Charlie Eyre CPsychol AFBPsS FCMI

Chartered Psychologist
HCPC Registered Occupational Psychologist
CMI Chartered Manager

Appendix D - Participant Information Sheet

INFORMATION SHEET FOR PARTICIPANTS

A study to determine the feasibility of a multi-component, co-designed toolkit for employees and managers, to mitigate the negative impact of out of hours work-related ICT demands (email, instant messaging etc.)

I would like to invite you to participate in this research project, which is part of my Organizational Psychology Professional Doctorate thesis at Birkbeck, University of London. This project has received ethical approval. To make an informed decision on whether you want to take part in this study, please take a few minutes to read this information sheet.

Who is conducting this research?

The research is conducted by Charlie Eyre, an Organizational Psychology Professional Doctorate candidate, under the guidance of supervisor Rachel Lewis / Jo Yarker, both from Birkbeck, University of London.

What is the purpose of the study?

The aim of the study is to co-design a toolkit for minimising the negative impact of out-of-hours ICT demands (email, instant messaging etc.).

Why have I been invited to take part?

I am inviting employees / team members, managers / leaders, and HR / Occupational Health professionals to take part in this study. Participants will be employees within an organisation, and will have mobile devices through which they have access to work-related emails, calls, messages etc.

What are the procedures of taking part?

If you decide to take part, you will be asked to complete a consent form and an initial questionnaire. This will gather biographical information, and will also ask some questions about your preferences for work-life boundaries, and the level of out-of-hours ICT activity you experience (this information will remain confidential). You will then be asked to participate in two online focus groups – each is expected to be 2.5-3 hours in length. The first will explore your personal experience of out-of-hours ICT demands, any strategies you employ for managing this, and a review of the outcomes of research in this area to date. Following the initial focus groups, a prototype toolkit will be designed by the researcher. This will be shared with participants, and the second focus group will be used to critically evaluate the content, and make suggestions to maximise the usability and relevance of its content. Upon completion of your participation you will be provided with a debrief or offered the opportunity to have access a summary of the findings, once analysed, by contacting the research team (details below).

The focus groups will be conducted using Microsoft Teams (a link to the privacy policy can be found here).

What are my participation rights?

Participation in this research guarantees the right to withdraw, to ask questions about how your data will be handled and about the study itself, the right to confidentially and anonymity (unless otherwise agreed), the right to refuse to answer questions, to have recordings turned off (for recorded focus groups) and to be given access to a summary of the findings.

What if I want to withdraw my information?

If you wish to withdraw responses or any personal data gathered during the study you may do this without any consequences. You can ask for your data to be removed up until the point of analysis, which will take place on approximately end of January 2022. If you would like to withdraw your data please contact the researcher (details below).

What will happen to my responses to the study?

Data collected in this study will be analysed and used for the research student dissertation. Data may also be used for academic publications no identifying information would be released. **All responses and contributions will be anonymised in the reporting of results**. Findings of the research will be shared with Birkbeck College as part of the doctoral thesis.

Will my responses and information be kept confidential?

All information will be treated with the strictest confidence throughout the study. All information will be kept in secure folders on a password protected computer, or a secure filing cabinet. Access to such information will only be allowed to the researcher and researcher supervisor. During the marking process, external examiners of my project may also have access. All participants are requested not to discuss or share any information disclosed within the focus groups with parties not involved with this research.

What are the possible risks to taking part?

The focus groups will explore strategies for minimising the negative effects of out-of-hours ICT usage. It is recognised that this may highlight to participants any stress or negative impact they have personally experienced through work-related pressure. Participants will be signposted towards resources to assist in the management of stress. In the event that through the focus group discussion participants recognise that they are experiencing significant stress-related challenges in the workplace, they are encouraged to raise these with their HR / Occupational Health department. Participants may also wish to access resources and assistance from mental health support organisations such NHS (www.nhs.uk/mental-health) and MIND (www.mind.org.uk).

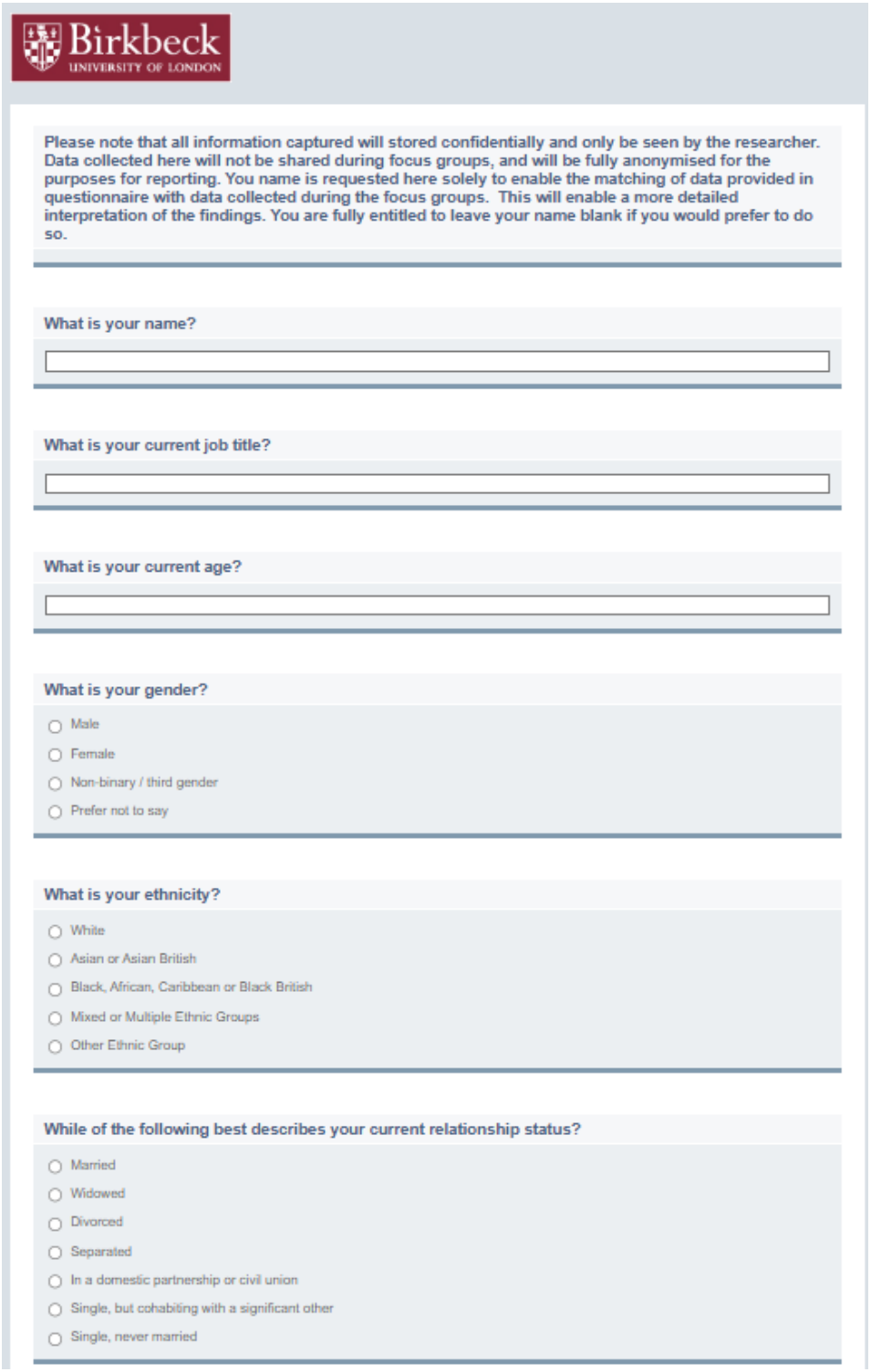
Any further questions?

If you have any questions or require more information about this study before or during your participation, please contact either of:

Charlie Eyre
charlie.eyre@workspheres.co.uk
Research Student

Rachel Lewis / Jo Yarker
op-pdop@bbk.ac.uk
Research Supervisor,
Department of Organizational Psychology,
Birkbeck, University of London,
Clore Management Building,
Malet Street, Bloomsbury,
London.

Appendix E – Participant Registration Questionnaire



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Please note that all information captured will stored confidentially and only be seen by the researcher. Data collected here will not be shared during focus groups, and will be fully anonymised for the purposes for reporting. You name is requested here solely to enable the matching of data provided in questionnaire with data collected during the focus groups. This will enable a more detailed interpretation of the findings. You are fully entitled to leave your name blank if you would prefer to do so.

What is your name?

What is your current job title?

What is your current age?

What is your gender?

- Male
- Female
- Non-binary / third gender
- Prefer not to say

What is your ethnicity?

- White
- Asian or Asian British
- Black, African, Caribbean or Black British
- Mixed or Multiple Ethnic Groups
- Other Ethnic Group

While of the following best describes your current relationship status?

- Married
- Widowed
- Divorced
- Separated
- In a domestic partnership or civil union
- Single, but cohabiting with a significant other
- Single, never married

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In your current role, do you have line management responsibility for others?

- ○ Yes
- ○ No

If yes, how many reports (direct or indirect) do you have?

What is your name?

What is your current job title?

What is your gender?

- ○ Male
- ○ Female
- ○ Non-binary / third gender
- ○ Prefer not to say

What is your ethnicity?

- ○ White
- ○ Asian or Asian British
- ○ Black, African, Caribbean or Black British
- ○ Mixed or Multiple Ethnic Groups
- ○ Other Ethnic Group

In your current role, do you have line management responsibility for others?

- ○ Yes
- ○ No

If yes, how many reports (direct or indirect) do you have?

On average, approximately how many hours per week do you work?

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Please rate the following statements in relation to your personal preferences (from Kreiner, 2006):

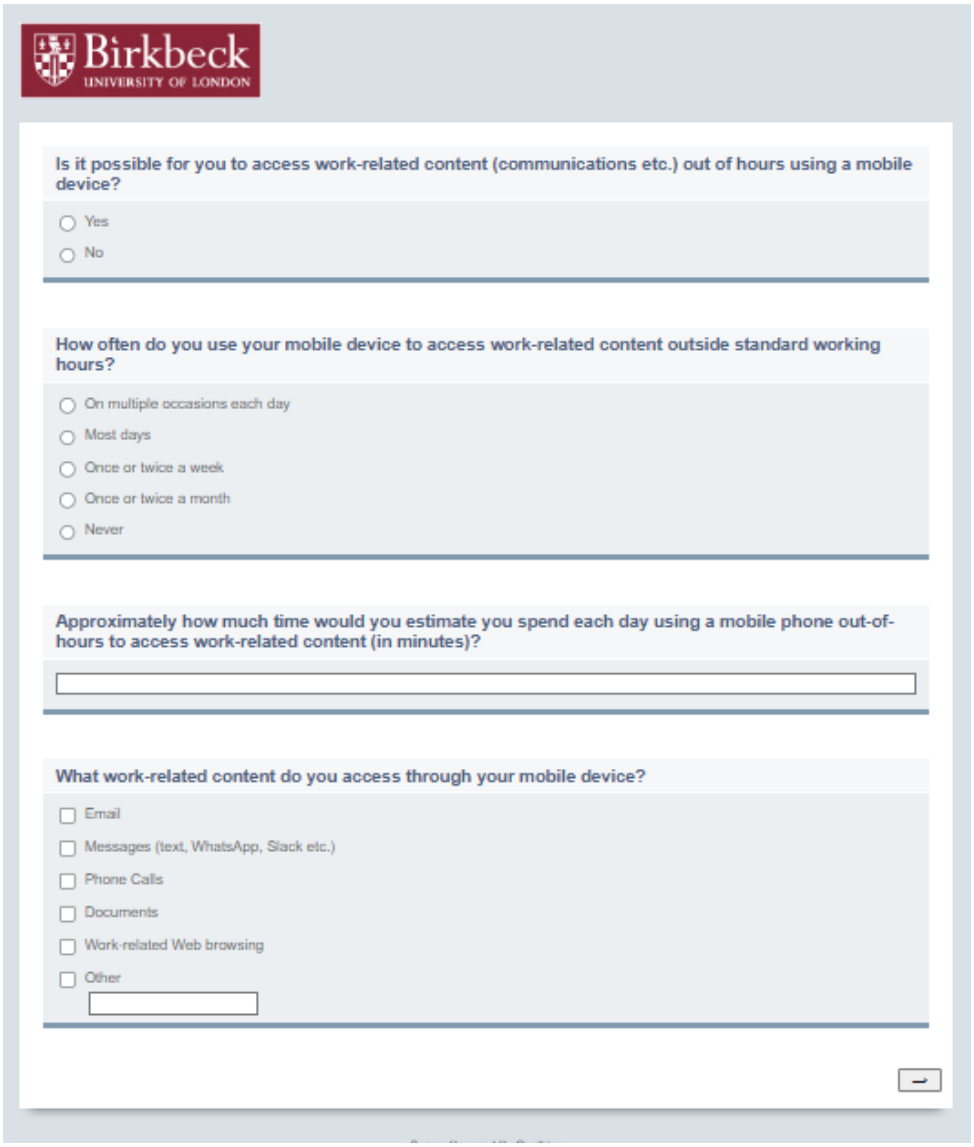
	Strongly Disagree	2	3	Neutral	5	6	Strongly Agree
I don't like to have to think about work while I'm at home	○	○	○	○	○	○	○
I prefer to keep work life at work	○	○	○	○	○	○	○
I don't like work issues creeping into my home life	○	○	○	○	○	○	○
I like to be able to leave work behind when I go home	○	○	○	○	○	○	○

Please rate the following statements in relation to your work colleagues (adapted from Kreiner, 2006).

	Strongly Disagree	2	3	Neutral	5	6	Strongly Agree
The people I work with don't like to have to think about work while they are at home.	○	○	○	○	○	○	○
The people I work with prefer to keep work life at work	○	○	○	○	○	○	○
The people I work with don't like work issues creeping into their home life	○	○	○	○	○	○	○
The people I work with like to be able to leave work behind when they go home.	○	○	○	○	○	○	○

For the following questions, think about how you use technology to communicate with people for work purposes. Specifically think about message-based technologies that allow you to control when you respond (email, text messages, voicemail, etc). Please rate how much you agree or disagree with the statements (from Barber & Santuzzi, 2015).

	Strongly Disagree	2	3	Neutral	5	6	Strongly Agree
It's hard for me to focus on other things when I receive a message from someone.	○	○	○	○	○	○	○
I can concentrate better on other tasks once I've responded to my messages	○	○	○	○	○	○	○
I can't stop thinking about a message until I've responded.	○	○	○	○	○	○	○
I feel a strong need to respond to others immediately.	○	○	○	○	○	○	○
I have an overwhelming feeling to respond right at that moment when I receive a request from someone.	○	○	○	○	○	○	○
It's difficult for me to resist responding to a message right away.	○	○	○	○	○	○	○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Is it possible for you to access work-related content (communications etc.) out of hours using a mobile device?
Yes
No
How often do you use your mobile device to access work-related content outside standard working hours?
On multiple occasions each day
Most days
Once or twice a week
Once or twice a month
Never
Approximately how much time would you estimate you spend each day using a mobile phone out-of-hours to access work-related content (in minutes)?
What work-related content do you access through your mobile device?
Email
Messages (text, WhatsApp, Slack etc.)
Phone Calls
Documents
Work-related Web browsing
Other

Potential Negative Impacts of Sustained Work-related Out-of-Hours Mobile ICT Demands (WOHMIDs)

Widespread use of increasingly advanced mobile ICT devices over the past decade has led to significant changes in the traditional boundaries between work and home. Access to workplace email and instant messaging has become immediate, as more employees have access to smartphones, tablets and other portable ICT devices. This has resulted in some realignment of individuals' and organisations' expectations in terms of the boundaries of the working day.

Over the past decade, much research has focussed upon the impact of Work-related Out-of-Hours Mobile ICT Demands (WOHMIDs) (and the 'always on' culture) on individual employees' well-being. This has focussed on the concepts of telepressure (e.g. Barber & Santuzzi, 2015), and the impact of out-of-hours work-related ICT usage on psychological detachment (e.g. Van Laetham et al (2018), Cambier et al (2019)), and psychological recovery (e.g. Derks et al, 2014). The research has shown both benefits and costs of this increased flexibility of working, and it is likely that these effects have been magnified by the recent enforced shift to widespread home working as a result of the Covid pandemic (e.g. Timmins, 2021).

A number of researchers (e.g., Gadeyne et al, 2018; Adisa et al, 2017) have highlighted that for individuals with an integration preference (i.e. a preference for having more fluid boundaries between work and non-work), the technology can be a facilitator, allowing employees to manage work flexibility and deal with emerging issues in a timely manner. However, much of the evidence-base indicates that out-of-hours work-related ICT usage can have a detrimental impact on employees' well-being, with the potential to negatively affect psychological detachment and recovery.

The following potential negative impacts have been found from exposure to sustained WOHMIDS:

- **Work to Home Conflict.** Gadeyne et al (2018) found that WOHMIDs led to a lack of availability to participate in home roles and activities, and a potential spillover of stress from the work to the home environment, making it harder for individuals to mentally detach and disengage (n.b. in this study, this was evident for PC/laptop but not smartphone)

- **Negative Effect on Family Relationships**. Adisa et al (2017) found that WOHMIDS risked "hijacking" an employee's attention during non-work and family time, leading to increased tension and potential conflict with family and friends around diverted focus and lack of availability.

- **Negative Impact on General Health & Well-being** (Adisa et al, 2017) found that extended working hours resulting from WOHMIDS can lead to excessive fatigue, and reliance on painkillers / energy drinks in order to stay alert out-of-hours.

- **Negative Effect on Psychological** Detachment (i.e. the ability to mentally disconnect from work during non-work time). Derks et al (2014) found that smartphone users were less likely to engage in out-of-hours detachment and recovery activities. Cambier et al (2019) and Santuzzi &

Barber (2018) found that out-of-hours telepressure had a negative effect on employees' ability to detach psychologically. In terms of the practical impact of this, Sonnetag et al (2010) found that psychological detachment was an important factor in protecting employees' well-being and work engagement.

- **Negative Rumination & Affect.** Park et al (2020) found that higher levels of WOHMIDs led to greater levels of rumination and negative affect / mood amongst employees.
- **Exhaustion (Physical & Cognitive).** Barber and Santuzzi (2015) and Santuzzi and Barber (2018) found that higher levels of telepressure led to higher levels of physical and cognitive exhaustion / burnout.
- **Absenteeism.** Barber & Santuzzi (2015) found that higher levels of telepressure predicted higher levels of absenteeism (i.e. days missed from work as a result of physical or psychological health issues).
- **Insomnia & Poor Sleep Quality.** Park et al (2020) found that WOHMIDs led to an increased levels of insomnia amongst employees. Barber et al (2014) found that the use of clear boundaries around work-related use of ICT had a positive impact on sleep, and Barber et al (2015) found telepressure predicted reduced sleep quality.

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Work-related Out-of-Hours Mobile ICT Demands

Potential Strategies for Mitigating Negative Impact (drawn from past literature)

Each of the below strategies has been sourced from existing literature and recommendations. Prior to the initial focus group, please look through the strategies listed and your view on their:

- Usefulness – the positive impact that the strategy will have in terms of mitigating negative impacts
- Practicability – i.e. how practical and realistic the strategy would be to implement.
- Scalability – the extent to which it would be possible to expand the use of the strategy across a broader population.

The evaluations you put on these are informal (and won't be collected) but will really help to inform the discussions we have at the focus group on the relative benefits of each. For each, it's suggested that a scale of 1 (least) to 5 (most) can be used for each attribute.

Beneath the table, a list of possible methods and tools is listed. Again, this is drawn from past literature, and is provided to help stimulate thinking about the format through which any of the strategies might be encouraged / built into a toolkit.

	Usefulness	Practicability	Scalability
Individual:			
Proactive management of others' expectations on out-of-hours availability (e.g. boundary permeation rules)			
• *direct: conversations & negotiation of shared agreements*			
• *indirect: email footers, out-of-office messages etc.*			
Switching off or restricting mobile alerts / switching off mobile (boundary management tactic)			
Using separate devices / inboxes for work and personal communications			
Prioritisation of key messages / emails that need to be checked out-of-hours (selective responsivity)			
Using out-of-office auto-response messages (including an estimation of expected response time)			
Using clearly demarcated 'stop' times for out-of-hours checking of mobile devices			
Using delay send functions to minimise out-of-hours demands for others.			
Ensuring out-of-hours communications emphasise positive feedback and goal progress rather than negative messaging			
Ensuring the physical separation of work and leisure spaces			
Receiving training in recovery activities / detachment strategies			
Tools / measures to increase self-awareness around work-life boundary management preferences			
Regular engagement in recovery / detachment activities			
Leader / Manager			
Understanding employees' individual work-life boundary management preferences and expectations.			
Negotiating tailored agreements with employees, based around individuals' personal circumstances and work-life boundary management preferences			
Role modelling behaviour (e.g. restricting out-of-hours communications sent and out-of-hours demands placed on others)			
Receiving training in family supportive supervision behaviours			
Actively supporting team members' choice to disconnect out-of-hours			
Organisational / Systemic			
Company-wide policy blocking out of hours emails (e.g. Volkswagen, Daimler examples)			
Supervisors / organisation setting clear guidelines about employee out-of-hours availability expectations.			
Initiatives for proactively managing external stakeholders' expectations about out-of-hours availability (e.g. contractual terms or communication guidelines)			

Organisational guidelines on effective use of email (e.g. when to cc others, response time expectations)			
Designing & adopting alternative working practices to reduce reliance on electronic communication			
Monitoring and adapting job design to avoid excessive out-of-hours demands			
Tools / measures to better understand the level of workplace telepressure[1] experienced by employees.			
Offering employees training / resources on recovery activities / detachment strategies			
Increasing shared awareness of the risks associated with extensive out-of-hours work-related ICT usage			
National legislative change protecting employees' rights not to respond out-of-hours communication (e.g. France, Ireland examples)			

Possible Method and Tools:

- Individual training (e.g. recovery strategies / detachment strategies)
- Information resources (e.g. around potential negative impact of sustained out-of-hours mobile demands)
- One-to-one and group coaching (to facilitate clear individual / group goals and action plans)
- Proactive work habit changing interventions (e.g. Work Habits Intervention Model WhIM – Russell et al 2021).
- Technical functionality of mobile devices (e.g. changing alert settings on mobile devices)
- Information & analytic tools (e.g. data on mobile phone usage out-of-hours demands)
- Diagnostic tools around individual preferences (e.g. short questionnaires to highlight personal segmentation preferences, attribution style (e.g. Duxbury et al, 2014))
- Wellbeing resources and apps (e.g. for facilitating wellbeing and detachment)
- Informal agreements (e.g. around out-of-hours availability expectations)
- Job redesign initiatives (e.g. to reduce out-of-hours availability expectations)
- Culture change initiatives (e.g. less reliance on email, less expectation of out-of-hours availability (implicit or explicit)
- Introduction of team / organisational guidelines (e.g. around out-of-hours communications good practice)
- Introduction of team / organisational policy (e.g. ban on out-of-hours communications)
- Introduction of national legislation (e.g. around right to disconnect – France (El Khomri), Ireland)

[1] 'Workplace Telepressure' has been defined as the preoccupation and urge to respond to message-based ICTs for work purposes (Barber & Santuzzi, 2015).

Appendix H - Semi Structured Interview Schedules - Time 1 & Time 2

Focus Group 1 – Initial Co-Design Focus Group

1) What are the types of out-of-hours ICT demands that you have personally experienced?
2) What impact have these demands personally had on you?
3) What strategies do you / colleagues currently employ to minimise the negative impact of these demands?
4) Referring to the proposed strategies highlighted in past research, which do you feel would be effective?
    a. What is it about the intervention that you believe would be effective?
    b. What factors would be important in maximising the success of its implementation?
    c. What support would you need from your manager / organisation in minimising the negative impact of these demands?
5) What would be the most important components of a toolkit for you?
    a. How should these be presented to maximise their usability?
6) What would be the least important components of a toolkit for you?

Additional Questions for Managers / HR & Occ. Health Practitioners

1) How do you currently assess the level of out-of-hours demands placed upon team members?
2) What strategies have you employed for minimising the negative impact of out-of-hours ICT demands on team members?
    a. How effective have these been?
3) What tools / resources / conditions would assist you in minimising the negative impact of out-of-hours ICT demands on team members

Focus Group 2 – Review of Prototype Toolkit.

1) What were your initial observations about the prototype toolkit?
2) Working through each component of the toolkit:
    a. How effective would this component be in minimising negative impact of out-of-hours ICT demands?
    b. What factors would need to be in place for it to be implemented successfully?
    c. What risks factors might minimise the efficacy of the component?
    d. How scalable do you believe the component to be?
    e. What modifications might be required to maximise the effectiveness of the component.
    f. Do you think that this could be adopted by you / your team / your organisation?
3) What role do you feel such a toolkit could play for individuals / teams / organisations going forwards?
4) Are there any factors that you believe would be important in selling the benefits of the toolkit to individuals / teams / organisations?

Appendix I - Complete Time 1 Thematic Analysis Coding

Themes:

TK – Toolkit Feasibility
BWC – Broader Working Context
IA – Individual Attributes
IS – Individual Strategies
LS - Leadership Strategies
ORG – Organisational Strategies
SS – Shared Strategies
IM – Negative Impact

TK1 - Feasibility & Value	Toolkit - whether it will be feasible / have value
TK1 - Feasibility & Value	Toolkit - Ratings from List
TK2 - Key Content	Toolkit - important content
TK3 - Required Success Factors	Toolkit needing support from top
TK3 - Required Success Factors	Toolkit needing to cover different organisations
TK3 - Required Success Factors	Toolkit needing to cover multiple levels in organisation
TK3 - Required Success Factors	Toolkit needing to cover multiple solutions
BWC1 - Positive Impacts	Context - Flexible working - important for disability
BWC1 - Positive Impacts	Context - Flexible working suits lifestyle
BWC1 - Positive Impacts	Context - WFH has made more productive
BWC1 - Positive Impacts	Positive Driver - Enabling role of Tech
BWC1 - Positive Impacts	Positive Impact - Greater Detachment
BWC2 - Broader Trends	Negative Driver - Work being Inbox Driven
BWC2 - Broader Trends	Negative Impact - Email is not productive work
BWC3 - Awareness of Potential Negative Impacts of OOH Demands	BM Strategy - Awareness Raising around Negative Impacts
BWC3 - Awareness of Potential Negative Impacts of OOH Demands	Positive Driver - Providing Info & Resources

BWC4 - Requirement for some Flexibility in OOH Activity	Context - Some flexibility needed with OOH expectations
BWC4 - Requirement for some Flexibility in OOH Activity	Context - Expectation of greater OOH flexibility in Senior Leadership
BWC4 - Requirement for some Flexibility in OOH Activity	Context - Greater OOH activity amongst Senior Leadership
BWC4 - Requirement for some Flexibility in OOH Activity	BM Strategy - Out of hours checking for next day's activities
BWC4 - Requirement for some Flexibility in OOH Activity	Negative Driver - Wanting opportunity to Speak to Colleagues OOH if needed.
BWC5 - Multiple Contact Channels	Context - Relative Priority of Different OOH Channels
BWC5 - Multiple Contact Channels	Negative Driver - Impact of multiple channels
BWC5 - Multiple Contact Channels	Negative Driver - OOH WhatsApp activity
BWC5 - Multiple Contact Channels	Negative Impact - Drives Behaviour onto another Platform
BWC6 - Macro Influences Driving OOH Activity	Negative Driver - Difficulty in Changing people's habits
BWC6 - Macro Influences Driving OOH Activity	Negative Driver - scale of change needed
BWC6 - Macro Influences Driving OOH Activity	Negative Driver - Social media habits infiltrating work
BWC6 - Macro Influences Driving OOH Activity	Negative Driver - Staff scared of losing job
BWC6 - Macro Influences Driving OOH Activity	Negative Impact - Org Financial Pressures
BWC6 - Macro Influences Driving OOH Activity	Context - Impact of business sector on OOH expectations
BWC6 - Macro Influences Driving OOH Activity	Negative Impact - Early, Lunch, Late Meeting Schedules
BWC6 - Macro Influences Driving OOH Activity	Negative Driver - Back to Back meetings during Day
BWC6 - Macro Influences Driving OOH Activity	Negative Driver - Communal Access to Diaries
BWC6 - Macro Influences Driving OOH Activity	Negative Impact - Technology Creating more Work
BWC6 - Macro Influences Driving OOH Activity	Negative Driver - Quantity of Work leading to OOH
BWC6 - Macro Influences Driving OOH Activity	Negative Driver - Working to Deadline
BWC6 - Macro Influences Driving OOH Activity	Context - Not using mobile only laptop during lockdown WFH (Codes)
BWC6 - Macro Influences Driving OOH Activity	Context - Organisational Resistance to Flexible Working
BWC6 - Macro Influences Driving OOH Activity	Negative Driver - Expectation to have seen recorded meetings
BWC6 - Macro Influences Driving OOH Activity	Wider Strategy - Legislative Changes
BWC6 - Macro Influences Driving OOH Activity	Negative Driver - Global company - emails any time
BWC6 - Macro Influences Driving OOH Activity	Negative Driver - Dependence on Email
BWC6 - Macro Influences Driving OOH Activity	Negative Driver - Hygiene Factors (e.g. Car Parking)
BWC6 - Macro Influences Driving OOH Activity	Negative Driver - Managers' increased span of control
BWC6 - Macro Influences Driving OOH Activity	Negative Driver - More Difficult to Monitor Wellbeing Remotely

BWC7 - Expectations around OOH Availability	Context - Flexible working - longer contact hours
BWC7 - Expectations around OOH Availability	Context - Impact of hybrid working
BWC7 - Expectations around OOH Availability	BM Strategy - Impact of Commute or lack of
BWC7 - Expectations around OOH Availability	Negative Driver - can immediately reconnect if needed
BWC7 - Expectations around OOH Availability	Negative Impact - Boundary Blurring - WFH
BWC7 - Expectations around OOH Availability	Negative Impact - setting unrealistic expectations
BWC7 - Expectations around OOH Availability	Positive Driver - Clients with Clear WLB
BWC7 - Expectations around OOH Availability	Negative Impact - Impression of 'peddling too hard'
BWC7 - Expectations around OOH Availability	Negative Impact - OOH Messages - Pressure to respond
BWC7 - Expectations around OOH Availability	Negative Driver - Email received while on Holiday
BWC7 - Expectations around OOH Availability	Negative Driver - Urgent Issue Requiring Immediate Response
BWC8 - Organisational Culture & OOH Expectations	Context - Impact of culture on OOH expectations (Codes)
BWC8 - Organisational Culture & OOH Expectations	Negative Driver - Business needs requiring OOH working
BWC8 - Organisational Culture & OOH Expectations	Negative Driver - Requirement to Achieve Sales
IA1 - Self Awareness	BM Strategy - If I hadn't seen that email would I feel the way I do
IA1 - Self Awareness	Positive Driver - Individual awareness around their periods of max efficiency
IA1 - Self Awareness	Positive Driver - Understanding own behaviour and potential Impact
IA1 - Self Awareness	Negative Driver - people uncomfortable with self-reflection
IA1 - Self Awareness	BM Strategy - Checking Psychological Motivation
IA1 - Self Awareness	Negative Driver - Staff Reluctant to Admit Problem
IA2 - Professional Identity	Negative Driver - Fear of Being Seen as Unresponsive
IA2 - Professional Identity	Positive Driver - Realising not Indispensable
IA2 - Professional Identity	Negative Driver - High Conscientiousness
IA2 - Professional Identity	Negative Driver - not wanting to feel acting selfishly
IA2 - Professional Identity	Negative Driver - Part of Professional Identity
IA2 - Professional Identity	Negative Driver - Status attached to having lots of emails
IA3 - Self Discipline in Maintaining Boundaries	Negative Impact - presenteeism
IA3 - Self Discipline in Maintaining Boundaries	Context - Individual Differences in inclination to check OOH messages
IA3 - Self Discipline in Maintaining Boundaries	Positive Driver - Individual responsibility to create boundaries

IA3 - Self Discipline in Maintaining Boundaries	Positive Driver - Self-discipline around OOH activity
IA3 - Self Discipline in Maintaining Boundaries	Negative Driver - Habitual Checking of Phone
IA3 - Self Discipline in Maintaining Boundaries	Negative Driver - OOH Messages - Motivation to Send
IA3 - Self Discipline in Maintaining Boundaries	Negative Driver - Pressure to work OOH - Intrinsic
IA3 - Self Discipline in Maintaining Boundaries	Negative Driver - tendency to 'explain away' unhealthy OOH work
IA3 - Self Discipline in Maintaining Boundaries	Negative Driver - User Overriding Restrictions
IA4 - Individual Choice & Agency	Context - Personal Choice & Control to work OOH
IA5 - Out-of-Work influences	BM Strategy - Influence of Partner
IA5 - Out-of-Work influences	Negative Driver - Dealing with Competing Personal Demands
IA6 - Self-Protective Motivation to Send Messages	Negative Driver - Emailing to Pass Responsibility to Others
IA6 - Self-Protective Motivation to Send Messages	Negative Driver - Emails sent as Back Covering Exercise
IA6 - Self-Protective Motivation to Send Messages	Negative Driver - Perception that sending Email transfers ownership to recipient
IA6 - Self-Protective Motivation to Send Messages	Negative Driver - cc culture
IA7 - Individual Career Context	Context - BM Expectations change over career
IA7 - Individual Career Context	Context - Young in Career - Expectations & Support
IS1 - Data & analytics	BM Strategy - Analytical Data on Usage
IS1 - Data & analytics	BM Strategy - Analytical Data on Usage - Potential Misuse (Codes)
IS2 - Expectations Management	BM Strategy - Employees Saying 'no'
IS2 - Expectations Management	BM Strategy - Managing Colleagues' Expectations
IS2 - Expectations Management	BM Strategy - Out of Office OOO Messages
IS2 - Expectations Management	BM Strategy - Sender Managing Expectations of Recipient
IS2 - Expectations Management	BM Strategy - Email footers
IS2 - Expectations Management	Positive Driver - Individual feeling more confident in their ability - push back
IS3 - Willingness to 'push back'	BM Strategy - having honest conversations about excess demands
IS3 - Willingness to 'push back'	Positive Driver - Assessing staff capability to say 'no'
IS4 - Technological Boundary Management	Negative Driver - Linkage of Technical Devices
IS4 - Technological Boundary Management	Negative Driver - MS Office Flag showing you're online
IS4 - Technological Boundary Management	Negative Driver - Notifications
IS4 - Technological Boundary Management	BM Strategy - Turning Devices Off

IS4 - Technological Boundary Management	BM Strategy - Turning off notifications
IS4 - Technological Boundary Management	BM Strategy - Auto-Filtering of Emails
IS4 - Technological Boundary Management	BM Strategy - Connecting Work Emails to Work Phone
IS4 - Technological Boundary Management	BM Strategy - Different 'Focus Time' Settings
IS4 - Technological Boundary Management	BM Strategy - having different login IDs for work and non-work
IS4 - Technological Boundary Management	BM Strategy - not routing work emails to phone
IS4 - Technological Boundary Management	BM Strategy - Selective Notifications
IS4 - Technological Boundary Management	BM Strategy - separate work and personal phones
IS4 - Technological Boundary Management	BM Strategy - Using multiple diaries (Codes) (Codes)
IS4 - Technological Boundary Management	BM Strategy - Using personal device for work
IS4 - Technological Boundary Management	BM Strategy - Using work calendar to track OOH appts.
IS4 - Technological Boundary Management	Negative Driver - Not aware of the time when OOH
IS4 - Technological Boundary Management	Negative Driver - Work and Personal Emails going into Same Inbox
IS4 - Technological Boundary Management	BM Strategy - refusing to get a work smartphone
IS5 - "inbox" Management	BM Strategy - Clearing down Inbox
IS5 - "inbox" Management	BM Strategy - Not Opening Emails
IS5 - "inbox" Management	BM Strategy - Not Reading cc'ed Emails
IS5 - "inbox" Management	BM Strategy - Not Using Email (Codes)
IS5 - "inbox" Management	Negative Driver - Urge to clear inbox
IS6 - Prioritisation / Triaging of OOH Messages	BM Strategy - Triaging of Messages
IS6 - Prioritisation / Triaging of OOH Messages	BM Strategy - Respond if Only Quick Response Needed
IS6 - Prioritisation / Triaging of OOH Messages	BM Strategy - Responding to Say You'll Deal with Later
IS6 - Prioritisation / Triaging of OOH Messages	BM Strategy - Triaging and prioritising of OOH comms
IS7 - Physical Boundaries	BM Strategy - Distancing Self from Device
IS7 - Physical Boundaries	BM Strategy - Separate physical work space
IS7 - Physical Boundaries	Negative Driver - Phone is with You Regardless of Whether in Office
IS8 - OOH Messages - Content & Tone	OOH Messages - Content & Tone
IS9 - Minimising OOH Disturbance for Others	BM Strategy - Delay Send Function
IS9 - Minimising OOH Disturbance for Others	Positive Driver - Leaders not sending OOH messages (Codes)

IS9 - Minimising OOH Disturbance for Others	Negative Impact - Filling others' inboxes
IS10 - Temporal Boundary Management	BM Strategy - Clear Cut-off Times
IS11 - Non-Work Detachment Activities	BM Strategy - Proactive engagement in non-work detachment activities
IS11 - Non-Work Detachment Activities	BM Strategy - Recovery Activity Engagement
IS11 - Non-Work Detachment Activities	Positive Driver - Making time for Social Activities outside Work
LS1 - Leaders & organisation prioritising staff well-being	Context - Boundary management - orgs should be doing more
LS1 - Leaders & organisation prioritising staff well-being	Context - Organisational assessment of ST vs LT costs
LS1 - Leaders & organisation prioritising staff well-being	Context - Organisational Benefits of WLB
LS1 - Leaders & organisation prioritising staff well-being	Negative Driver - Limited Individual Impact without Organisational Support
LS1 - Leaders & organisation prioritising staff well-being	negative driver - managers not motivated to stop OOH
LS1 - Leaders & organisation prioritising staff well-being	Positive Driver - Organisational prioritisation of well-being agenda
LS1 - Leaders & organisation prioritising staff well-being	Negative impact - Victim Blaming
LS2 - Clear Prioritisation of Work	Positive Driver - Understanding of urgency and priorities
LS3 - Management of Work Volume	Positive Driver - Managers reallocating work to avoid OOH
LS3 - Management of Work Volume	Positive Driver - Supporting Managers to Delegate Effectively
LS3 - Management of Work Volume	BM Strategy - Leadership Pushing Back to Client
LS3 - Management of Work Volume	BM Strategy - Managing External Client expectations
LS3 - Management of Work Volume	Wider Strategy - Leadership Accepting Limitations of Capacity
LS4 - Leaders role modelling with OOH behaviour	Positive Driver - Leaders promoting clear work life boundaries
LS4 - Leaders role modelling with OOH behaviour	Positive Driver - Managers giving licence to stop OOH
LS4 - Leaders role modelling with OOH behaviour	BM Strategy - Avoid rewarding OOH Behaviour
LS4 - Leaders role modelling with OOH behaviour	Positive Driver - Managers role modelling behaviour
LS4 - Leaders role modelling with OOH behaviour	Negative Driver - Managers not behaving consistently with message
LS5 - Challenging OOH Activity	BM Strategy - Managers challenging Staff OOH
LS5 - Challenging OOH Activity	Positive Driver - Managers holding one another to account
LS5 - Challenging OOH Activity	Positive Driver - Managers monitoring OOH activity
LS5 - Challenging OOH Activity	Positive Driver - Managers being clear on expectations
LS5 - Challenging OOH Activity	Positive Driver - Managers resetting expectations
LS5 - Challenging OOH Activity	Positive Driver - Managers giving licence to stop OOH

LS6 - Leaders Expecting OOH Availability	Negative Driver - Leaders sending OOH messages
LS6 - Leaders Expecting OOH Availability	Negative Driver - Pressure from Leadership to work OOH
LS6 - Leaders Expecting OOH Availability	Negative Driver - Timing of work requests leads to OOH
LS6 - Leaders Expecting OOH Availability	Negative Driver - Manager is Impatient or wants to get off desk
LS6 - Leaders Expecting OOH Availability	Negative Driver - Leaders Expecting OOH Availability
LS6 - Leaders Expecting OOH Availability	Negative Impact - Trickle Down Effect
ORG1 - Supportive HR Policies & Activity	Positive Driver - Managers Building WLB into Appraisal Discussions
ORG1 - Supportive HR Policies & Activity	BM Strategy - Taking OOH time back
ORG1 - Supportive HR Policies & Activity	BM Strategy - TOIL for OOH activity
ORG1 - Supportive HR Policies & Activity	Positive Driver - Broader Well-being interventions
ORG1 - Supportive HR Policies & Activity	Positive Driver - Future Leaders selected on prioritisation of WLB
ORG1 - Supportive HR Policies & Activity	Positive Driver - Leader performance evaluated on WLB metrics
ORG1 - Supportive HR Policies & Activity	BM Strategy - Induction of Staff around Expectations
ORG1 - Supportive HR Policies & Activity	BM Strategy - Protected Time (No Meetings)
ORG1 - Supportive HR Policies & Activity	BM Strategy - Contracted Rest Hours
ORG1 - Supportive HR Policies & Activity	BM Strategy - Diarised 'Catch up' Time (e.g. Reset Day)
ORG1 - Supportive HR Policies & Activity	Positive Driver - Job Redesign
ORG1 - Supportive HR Policies & Activity	Wider Strategy - OOH Contact Policy
ORG1 - Supportive HR Policies & Activity	Wider Strategy - Proactively Changing Culture
ORG1 - Supportive HR Policies & Activity	BM Strategy - Designated No Email Periods
ORG1 - Supportive HR Policies & Activity	Wider Strategy - Clear Psychological Contracts
ORG1 - Supportive HR Policies & Activity	Wider Strategy - Comms Policy & Guidance
ORG1 - Supportive HR Policies & Activity	Negative Driver - HR Initiative loses momentum and Coverage
ORG2 - Training & Development	BM Strategy - Training for Managers in WLB
ORG2 - Training & Development	BM Strategy - Training in Detachment Activities
ORG2 - Training & Development	BM Strategy - Training in Tech Functionality
ORG2 - Training & Development	Negative Driver - Managers lacking Skills to Effectively Implement
ORG3 - Effective Communication throughout all organisation	Positive Driver - Clear means of Translating Strategy into Behaviour
ORG3 - Effective Communication throughout all organisation	Positive Driver - Communicate initiatives through local managers

ORG3 - Effective Communication throughout all organisation	Negative Driver - Difficulty in Tailoring message to all staff
ORG4 - Supportive Tech Infrastructure	BM Strategy - Ban on Emails
ORG4 - Supportive Tech Infrastructure	BM Strategy - Designated No Email Periods
ORG4 - Supportive Tech Infrastructure	BM Strategy - Messages Telling You when working OOH
ORG4 - Supportive Tech Infrastructure	BM Strategy - Org shutting down email function OOH
ORG4 - Supportive Tech Infrastructure	Positive Driver - Integration Between Platforms
ORG4 - Supportive Tech Infrastructure	Negative Driver - All Messages are Sent as Urgent
ORG4 - Supportive Tech Infrastructure	Negative Driver - Mobile & organisational Restrictions
ORG4 - Supportive Tech Infrastructure	Negative Driver - Mobile Devices not co-ordinated
ORG4 - Supportive Tech Infrastructure	Negative Driver - Unreliable Internet Connection
S1 - Individualisation & Co-creation of BM Preferences	Context - Different tech demands for different roles (Codes)
S1 - Individualisation & Co-creation of BM Preferences	Positive Driver - Managers understanding individual BM preferences
S1 - Individualisation & Co-creation of BM Preferences	BM strategy - Checking colleagues' contact preferences
S1 - Individualisation & Co-creation of BM Preferences	BM Strategy - Pre-agreed OOH Contactability
S1 - Individualisation & Co-creation of BM Preferences	Positive Driver - Co-creation of Boundaries
S1 - Individualisation & Co-creation of BM Preferences	Positive Driver - Individualisation of Boundary Management
S1 - Individualisation & Co-creation of BM Preferences	Positive Driver - Up front negotiation of boundaries
S1 - Individualisation & Co-creation of BM Preferences	Negative Driver - Ensuring Equality while Individualisation of BM
S1 - Individualisation & Co-creation of BM Preferences	Negative Impact - Different Contractual Arrangements
S1 - Individualisation & Co-creation of BM Preferences	Negative Impact - BM Strategies Prioritise those with families
S1 - Individualisation & Co-creation of BM Preferences	Wider Strategy - Clear Arrangements for 'On Call'
S1 - Individualisation & Co-creation of BM Preferences	Context - Shift Work, Part Time and OOH Expectations
S2 - Trusting & Supportive Relationship - Leaders and team members	Positive Driver - Leaders showing empathy
S2 - Trusting & Supportive Relationship - Leaders and team members	Positive Driver - Leaders Trusting Staff
S2 - Trusting & Supportive Relationship - Leaders and team members	Positive Driver - Employees Trusting Organisation
S2 - Trusting & Supportive Relationship - Leaders and team members	Negative Driver - Permissions not Interpreted as Genuine by Staff
IM - Negative Impact	Negative Impact - Effect on relationships
IM - Negative Impact	Negative Impact - Burnout
IM - Negative Impact	Negative Impact - Checking Email

IM - Negative Impact	negative Impact - Decline in Well-being
IM - Negative Impact	Negative Impact - Disturbance to Family Life
IM - Negative Impact	Negative Impact - Effect on Sleep
IM - Negative Impact	Negative Impact - Frustration & Terseness with Colleagues
IM - Negative Impact	Negative Impact - Heightened OOH Vigilance around being Contacted
IM - Negative Impact	Negative Impact - Inability to Detach
IM - Negative Impact	Negative Impact - Insomnia
IM - Negative Impact	Negative Impact - Leaving Role
IM - Negative Impact	Negative Impact - Quick Email Check Means Thinking about Work far longer(Codes)
IM - Negative Impact	Negative Impact - Regular OOH work makes you less productive
IM - Negative Impact	Negative Impact - Working while on holiday
IM - Negative Impact	Negative Impact - Working while on Sick Leave
IM - Negative Impact	Negative Impact - Leaders Feeling Guilty
IM - Negative Impact	Negative Impact - Increased Turnover
IM - Negative Impact	Negative Impact - Bullying & Harassment Grievances

Appendix J – Cross Referencing of Themes with Draft Toolkit Content

1. Overall Themes:

- Overall volume of work is massive driver for OOH tech-based demands – spillover for individuals and managers
- Organisational / individual practices are not keeping pace with rate of tech change
- One size won't fit all – success of toolkit is contingent on individualisation.
- Need for flexibility – tech genie out of bottle, and no going back to '9-5' contact only.
- Disconnect between intent of actions and impact on others (e.g. I'll just get it off my desk')
- OOH expectations rarely explicitly set out, but fuelled by variety of intrinsic and extrinsic factors

2. Feasibility and Value of a Toolkit:

- Majority believe it would have value
- Would need to be multifaceted (across roles, grades, sectors)
- Would need clear and unwavering leadership support – 'walk the talk'
- Would need alignment with wider HR / Leadership practices (appraisal, selection, induction etc.)

3. Negative Impacts of OOH Demands Highlighted by Participants	**Proposed Toolkit Content:**
▪ Bullying / Grievance Cases ▪ Burnout ▪ Habitual checking of messages OOH ▪ Heightened sense of vigilance due to expectation of OOH contact ▪ Inability to detach ▪ External impression that organisation is 'peddling too hard' if extensive OOH communication. ▪ Increased turnover / staff quitting as result of excess OOH demands ▪ Negative impact on sleep ▪ Presenteeism behaviour ▪ Decline in productivity after sustained OOH demands ▪ Working while on holiday ▪ Working while on sick leave ▪ Frustration and terseness coming across in OOH communications ▪ Disturbance to family life.	▪ Summary of Evidence to date around Negative Impacts resulting from OOH demands.

4. Contextual Considerations	**Proposed Toolkit Content:**

- Positive Aspects of Mobile Tech
  o Enabling flexible WLB
  o Flexibility helps in accommodating disabilities (e.g. ADHD)
 	
- Evolving Working Practices
  o New additional expectations & working practices
  ▪ Back-to-back daytime online meetings
  ▪ diary being controlled by others = pushes work into evenings
  ▪ Multiple Tech Channels of Communication
  • Exponential increase in traffic
  • Shift in expectation around immediacy of response
  • Monitoring & Prioritisation?
  ▪ 'Two places at once' – e.g. expectation to watch recorded online meetings = pushes work into evenings
  ▪ Increased expectation around immediate response – capability to instantly reconnect OOH.
  ▪ Flexible WFH working = longer contactable hours
  ▪ Global companies = longer contactable hours
  ▪ More difficult for managers to monitor employee working hours / WLB remotely
  ▪ Commute time becomes (expected) work time.
  ▪ Dependency on email – is this productive / 'good' work?
  ▪ 'Rising to challenge' during pandemic (with OOH work) has now set unrealistic expectations
  ▪ Impact of OOH culture – 'it's how we do things round here'
  ▪ WFH – desire to demonstrate that working through responses, often OOH.
  o Broader Societal Factors
  ▪ Financial / delivery pressures on orgs = pressure for OOH availability
  ▪ Job insecurity – leading to OOH digital 'presenteeism'
  ▪ Social media habits influencing OOH working practices
  • E.g. habitual phone checking
  • Increased expectation of semi-permanent online presence.
	▪ Narrative Summary of impact of changing work environment (especially post pandemic), and the risks this presents for OOH demands.

5. Individual Attributes Affecting OOH Activity & Impact	**Proposed Toolkit Content:**
- Self awareness ▪ Allowing time and space to reflect on personal OOH practices ▪ understanding of personal boundary management preferences ▪ number, frequency and type of boundary violations ▪ reasons and drivers for boundary violations – intrinsic or extrinsic? - Professional Identity ▪ Perceived status attached to being busy / high email volume ▪ Perception of indispensability ▪ High Conscientiousness leading to greater OOH activity ▪ Not wanting to feel acting selfishly - Self Discipline ▪ Individual Differences in inclination to check technology OOH ▪ OOH Pressure can be intrinsic rather than simply organisational pressure ▪ Individuals need to take responsibility for actively managing own boundaries ▪ Habitual – checking when cooking kids' tea or watching TV with partner. - Individual Choice & Agency ▪ Extent to which OOH contactability / work is personal decision, rather than organisational expectation - Individual Career Context ▪ Boundary management preferences evolve as career progresses = renegotiation ▪ Those early in career may benefit from org support in establishing WLB	▪ Set of key reflective questions to enable employees to evaluate current demands and their causes.

6. Individual Strategies for Managing Potential Negative Impact of OOH Demands ***(many of which will also apply for managers/leaders as individuals)*** - **Expectations Management** ▪ Saying 'no' when needed and having honest conversation about excess demands (contingent on relationship with manager / clients - see shared strategies) ▪ Proactive discussion with colleagues about preferences. ▪ EM through tech solutions – e.g. OOO messages, email footers. - **Technological Boundary Management Strategies** ▪ Auto-filtering of emails ▪ Selective or Muted OOH notifications ▪ OOO Messages with expectations management around response time ▪ Email footers - with expectations management around response time ▪ Separate work / non-work devices, logins, inboxes, notifications. ▪ Turning devices off ▪ Muting 'presence status' (i.e. showing colleagues whether you're working – MS Office flag etc.) ▪ Declining option of having a work smartphone - **Inbox Management** ▪ Triaging and prioritisation of OOH emails ▪ Selective reading of emails (e.g. not reading cc) ▪ Questioning need to 'clear down' inbox. ▪ Not reading emails ▪ Opting out of email altogether - **Physical Boundary Management** ▪ Using separate daytime workspace where possible ▪ Distancing self from device OOH - **Temporal Boundary Management**	**Proposed Toolkit Content:** ▪ Signposting to resources / apps for capturing data on OOH demands to establish baseline. ▪ Summarising the tech solutions for boundary management that are available, options for deploying these and potential pitfalls to be aware of. ▪ Considerations for approaching a conversation with line manager etc on resetting OOH expectations. ▪ Strategies for minimising disturbance of other OOH, and considerations for managing any necessary violations. ▪ Summary of evidence base around non-work detachment activities, and benefit these may have for individuals.

▪ Setting clear, personal cut-off times. Using family / partner to reinforce these. - **Minimising OOH Disturbance of Others** ▪ Delay send function – both pros and cons identified ▪ General support for 'nudge' notifications suggesting delayed send ▪ Personal stop check strategy – is message really necessary? ▪ When necessary, clear, personal message managing expectations on response times. - **OOH Messages – Content and Tone** ▪ Understanding impact that message content may have on recipient if received OOH. - **Non-work Detachment Activities** ▪ Proactive planning of activities to increase boundary segmentation. ▪ Engaging in hobbies in which checking devices is not possible. - **Data & Analytics** ▪ Reviewing objective stats: number, frequency and type of boundary violations (e.g. through MS Viva reports) ▪ Evaluating gap between reality and expectation of OOH activity -	
7. Leadership Strategies for Managing Potential Negative Impact of OOH Demands - **Clear prioritisation of team members' well-being** ▪ Actions as well as words ▪ Giving team members licence to set boundaries ▪ Will need support (and consistent actions) right from top of organisation. ▪ Avoid 'victim blaming' – passing responsibility back to employees to create boundaries ▪ Using appraisal / check-in meetings to understand team member's current position. What does team members' personal data say about their OOH habits? - **Clarity on which work is genuinely high priority**	**Proposed Toolkit Content:** ▪ Set of key reflective questions to enable leaders to evaluate the drivers behind OOH activity within their own organisation, and their estimated impact on staff. ▪ 'Checklist' of points for consideration around any organisational initiative to minimise risks of OOH demands.

▪ Team members should have clear understanding of that is / is not high priority. ▪ Considering carefully whether OOH contact or response is needed - **Management of Work Volume** ▪ Delegating effectively, clearly and fairly ▪ Accepting reasonable limits around team members' capacity ▪ Ensuring situations of under-resourcing are addressed ▪ 'Pushing back' to client / senior manager on behalf of team where necessary. ▪ Active monitoring of team members' OOH actively ▪ Reallocating work where it will result in OOH expectations - **Leaders Role Modelling with OOH Behaviour** ▪ Promoting clear WLBs ▪ Personally avoiding sending OOH messages wherever possible ▪ Using OOO messages / footers that promote WLB. ▪ Avoiding behaviour that runs contrary to personal / organisational messages around team members' WLB. ▪ Some managers 'couldn't care less' about supporting WLB for team/ - **Challenging OOH Activity** ▪ Checking in with staff when clear that OOH activity occurring. ▪ Managers holding one another to account on OOH activity ▪ Proactive resetting of expectations where needed. - **Leaders Expecting OOH Availability** ▪ Leaders regularly sending OOH messages ▪ Much of expectations implicit ▪ Manager impatient and wanting to get 'off desk' ▪ Start-up, driven culture with high expected levels of client responsiveness ▪ Where does OOH request / expectation start? (e.g. Trickle Down effect - CEO / Minister / Client?) ▪ Timing of request (e.g. 4pm Friday) leads to inevitable OOH working requirement.	

8. Organisational Strategies for Managing Potential Negative Impact of OOH Demands - Supporting HR Policies and Activity ▪ Induction – clear, honest dialogue with team members about OOH expectations on recruitment. ▪ Appraisal – managers assessed on degree of OOH activity within team ▪ Promotion / Progression - managers assessed on degree to which they prioritise WLB ▪ Policies around taking OOH time back (TOIL) ▪ Use of 'Protected Time' during day (no meetings) = less OOH spill-over. ▪ Designated 'no-email' periods – pros and cons ▪ Broader well-being interventions – stress management etc. ▪ Communications / OOH contact policies – pros and cons • Consensus on channels / circumstances for OOH contact • OOH guidance on relatively new tech – e.g. WhatsApp, Slack et. ▪ Clear policies around on-call arrangements ▪ Clearly articulated expectations for PT / shift workers. - Training & Development ▪ Raising awareness of potential negative impacts of OOH demands ▪ Raising awareness of benefits of specific types of **detachment activity** ▪ Raising awareness of related concepts (e.g. smartphone habitual behaviour) ▪ Training for staff on effective use of **tech functionality** (e.g. notifications, delay send etc.) ▪ Skills development for managers in having effective 1-2-1 discussions around OOH / WLB expectations ▪ Would need to be tailored – not 'sheep dip' e-learning. ▪ Leadership coaching likely to be beneficial in tailoring solutions to specific organisational context. - Effective Communication throughout Organisation ▪ Consistency of messaging across organisation (through local managers?) ▪ Consistency of behaviour with messaging ▪ Tailoring of message to all staff (with different shift patterns / OOH expectations)	**Proposed Toolkit Content:** ▪ Overview of how broader HR policies can facilitate / detract from initiatives to minimise OOH potential harm. ▪ Points for consideration on training & development activities. Signposting particular initiatives. ▪ Checklist of considerations for supportive tech infrastructure.

▪ Recognition that sustained effort needed – 'policy' initiative can be quickly forgotten. ▪ SLT holding others to account for their OOH behaviour. - Supportive Tech Infrastructure ▪ Ability to change settings around notifications etc. ▪ Enabling functionality that will minimise OOH demands (e.g. delay send and proactive nudging of senders of OOH messages) ▪ Supporting changes that will minimise OOH demands (e.g. removing 'presence status' if working out of hours). ▪ Supporting changes that will minimise pressure to response (e.g. use of 'urgent' status). ▪ Allowing some flexibility on tech to cater for individual boundary management preferences (e.g degree of demarcation of personal / work devices and accounts). ▪ Allowing use of focus time functions / apps that support clear boundary management.	
9. **Shared Strategies for Managing Potential Negative Impact of OOH Demands** - Individualisation & Co-creation of BM Preferences ▪ Pre-agreeing OOH contactability ▪ Managers facilitating conversation to understand team members' boundary management preferences. ▪ Individualisation of boundary management. ▪ Checking for personal contact preferences ▪ Ensuring shift work, part time OOH contact arrangements are agreed ▪ Clear and up-front arrangements for 'on-call' requirements ▪ Recognising potential issues around fairness – e.g. do staff with families get 'better' deal? - Trusting and Supportive Relationship ▪ The BM permissions discussed need to be seen as genuine by team member ▪ Need for reciprocal trust between leaders and team members (e.g. not covertly evaluated on who is putting in extra effort OOH).	**Proposed Toolkit Content:** ▪ Overview of how individualisation likely to be key to success, and likely facilitators / barriers to making this work. ▪ Set of reflective questions around considerations for a manager / team member boundary co-creation discussion.7

▪ Leaders need to show empathy around the impact of OOH demands ▪ Leaders' willingness to push back on behalf of teams around OOH demands when needed. ▪ Acknowledgement that managers who protect staff from OOH demands will increase personal workload / OOH activity unless systemic change.	

Appendix K - Feedback Proforma Time 2

Co-Design Round 2

Feedback Template – Out of Hours (OOH) Demands Toolkit

Participant Name

The prototype toolkit has been developed on the basis of the systematic literature review and the Focus Groups conducted during Round 1 of the research.

As far as possible, the ideas and views shared to date have been incorporated, but it is still very much a work-in-progress. Your honest feedback is welcomed to ensure that the final version is as useful as possible to individuals and organisations.

Links to the Documents:

Introduction

Part 1 – Individual Workbook

Part II – Leader and HR Guidance Notes

Worksheet 1 – Important Contextual Considerations

Worksheet 2 – Potential Negative Impact of OOH Demands

Worksheet 3 – Strategies for Managing OOH Demands

Worksheet 4 – Additional Resources

1. Overall observations about toolkit

2. How effective is the current structure / content in raising awareness of the potential negative effects of OOH demands?

3. **How effective is the current structure / content in helping *individuals* take practical steps to help minimise the potential negative effects of OOH demands?**

4. **How effective is the current structure / content in helping *leaders and organisations* take practical steps to help minimise the potential negative effects of OOH demands?**

5. **Which areas do you feel work effectively?**

6. **Which areas are currently less effective?**

7. **Is there any important content that you feel is currently missing?**

8. **Overall, do you feel that the toolkit can be of value to individuals / organisations seeking to manage out-of-hours work-related mobile demands?**

9. How do you feel the toolkit should be made available to users? - Website / Microsite - Mobile App - Downloadable pdf / Word documents. - Other

10. **Any Further Comment on Specific Sections**
Introduction
Part I – Individual Workbook
Part II – Leader & HR Guidance Notes
Worksheet 1 – Important Contextual Considerations
Worksheet 2 – Potential Negative Impact of OOH Demands
Worksheet 3 – Strategies for Managing OOH Demands
Worksheet 4 – Additional Resources

Appendix L – Final Practitioner Evaluation Survey for Prototype Toolkit

Evaluation Survey for Prototype Toolkit for managing the negatives impact of out of hours mobile ICT demands

Mobile technology has helped to transform our working lives, enabling ready and immediate contact across our professional networks. While such accessibility has clear benefits for individuals and organisations, there is growing research evidence that expectations of availability outside working hours can have a range of negative effects on employees.

As part of my Birkbeck professional doctorate in Occupational Psychology, I have conducted a co-design project to develop a toolkit designed to help individuals and organisations minimise the potential harm caused by mobile technology out-of-hours demands. A total of 24 participants have beeen involved in the co-design process.

→

This short survey aims to capture your views about the prototype toolkit which has been designed to minimise the potential negative impact of out-of-hours mobile ICT demands. The survey should take no more than 5-10 minutes to complete, and your responses will provides an important additional viewpoint on the benefits that the prototype toolkit might currently be able to offer, and also identify any alterations or additional areas that you believe would enhance the effectiveness of the toolkit further.

Links to the toolkit materials are provided below. Please review this content before responding to the short survey.

All responses will be treated anonymously, and will form part of the overall development and evaluation of the toolkit.

Many thanks for your participation in this research. The closing date for responses is **24th February 2023.**

For any further information or details about the research, please see the original research invitation here or contact the researcher Charlie Eyre directly at charlie.eyre@workspheres.co.uk

Introduction

Part I – Individual Workbook

Part II – Leader and HR Guidance Notes

Worksheet 1 – Important Contextual Considerations

Worksheet 2 – Potential Negative Impact of OOH Demands

Worksheet 3 – Strategies for Managing OOH Demands

Worksheet 4 – Additional Resources

Click NEXT to access the short survey

Overall, how effective is the current structure / content of the toolkit in **raising awareness** of the potential negative effects of out of hours mobile ICT demands?

- ◯ Strongly agree
- ◯ Somewhat agree
- ◯ Neither agree nor disagree
- ◯ Somewhat disagree
- ◯ Strongly disagree

How effective is the current structure / content of the toolkit in helping **individual employees** take **practical steps** to help minimise the potential negative effects of out of hours demands?

- ◯ Strongly agree
- ◯ Somewhat agree
- ◯ Neither agree nor disagree
- ◯ Somewhat disagree
- ◯ Strongly disagree

How effective is the current structure / content of the toolkit in helping **leaders and organisations** take **practical steps** to help minimise the potential negative effects of out of hours demands?

- ◯ Strongly agree
- ◯ Somewhat agree
- ◯ Neither agree nor disagree
- ◯ Somewhat disagree
- ◯ Strongly disagree

Which areas of the toolkit do you feel work most effectively?

Which areas of the toolkit are currently less effective?

Overall, do you feel that the toolkit can be of value to individuals , organisations seeking to manage out-of-hours work-related mobile demands?

Any further Comments:

Appendix M - Toolkit Reference

For further information on the toolkit content, please contact charlie.eyre@workspheres.co.uk