

## DOCTOR OF PHILOSOPHY

### The development of the E-Work Well-being scale and further validation of the E-Work Life scale

Charalampous, Maria

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# **The development of the E-Work Well-being scale and further validation of the E-Work Life scale**



**By**

**Maria Charalampous**

**PhD**

**May 2020**

*A thesis submitted in partial fulfilment of the University's requirements for the  
Degree of Doctor of Philosophy*

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## Ethical Approval Certificate (Study 4)



### Certificate of Ethical Approval

Applicant:

Maria Charalampous

Project Title:

Working at anytime, anyplace, and anywhere. How is this impacting on our well-being at work? A scale development.

This is to certify that the above named applicant has completed the Coventry University Ethical Approval process and their project has been confirmed and approved as Medium Risk

Date of approval:

22 March 2019

Project Reference Number:

P87758

## **Abstract**

Remote e-working and being able to work at anyplace, at any given, by making use of technology to stay connected to the colleagues and supervisors, has seen a substantial growth in the modern workplace; attracting the interest of both researchers and organisations. Except from the E-Work Life (EWL) scale that assesses the overall remote e-working experience (Grant et al., 2019), there are no current scales assessing these individuals' well-being at work. To fill this gap, the present thesis has as an overarching aim to create the E-Work Well-being (EWW) scale. The scale was developed following the scale development steps outlined by the Classical Test Theory. Guided by Van Horn, Taris, Schaufeli & Schreurs (2004) this thesis adopted a multi-dimensional work-related well-being model which includes five distinct well-being dimensions (and their sub-dimensions): affective, cognitive, social, professional, and psychosomatic. A systematic review, a qualitative study, and two cross-sectional studies were carried out to support the scale development and validation process.

In the systematic review, a narrative synthesis of 63 studies was presented. Findings indicated that researchers in the field focused more on the impact that remote e-working has on individuals' affective state, their social, and professional life, compared to their cognitive functioning and psychosomatic health. Whilst an overall positive impact of remote e-working was supported, some negative aspects were highlighted such as social and professional isolation, along with perceived threats in career development.

In the qualitative study, 40 remote e-workers from a well-reputed British IT company were interviewed. Findings both expanded on the impact that remote e-working had on the five well-being dimensions (Van Horn et al. 2004) and provided a greater understanding of contributing factors to remote e-workers' well-being. These included, organisational culture, individual differences, and technology used when building and

maintaining relationships. Understudied areas within remote e-workers' literature were also explored (e.g., switching-off from work, and health-related behaviours).

Based on the qualitative findings and the review of validated well-being scales (informed by the systematic review of the literature) a 150-item version of the EWW scale was developed. Feedback provided by experts led to a shorter and revised 74-item version of the scale, which was tested in a pilot study (within 202 U.K. remote e-workers). Exploratory Factor Analysis (EFA) and Exploratory Structural Equation Modeling (ESEM) suggested that, in their majority, the well-being constructs had their theorised items loading on to them. Findings also provided initial evidence of scale's construct and criterion-related validity, as well as supported EWW scale's internal consistency.

The findings from the pilot study led to a 71-item revisited version of the of the EWW scale, which was then assessed in a main study conducted within 399 U.K. remote e-workers. Confirmatory factor analysis (CFA) supported a final 69-item version of the EWW scale. However, a more parsimonious model (three-dimensional) was proposed to be an appropriate and theoretically robust framework to support the concept of well-being at work within remote e-workers. This model included: the *Individual factors*, the *Interaction between the individual and the organisation*, and *Health*. Construct validity, criterion-related validity, and reliability of the EWW scale was provided. CFA also tested the replicability of the EWL scale (Grant et al., 2019) factor structure.

In summary, the newly devised EWW scale is a unique and robust instrument that can be used within remote e-working populations. Using the EWW scale (potentially alongside the EWL scale) can help academics, managers, and organisations to investigate remote e-working's multi-dimensional impact on individuals. This can, then, guide and inform policies and strategies to ameliorate any issues linked to this working practice; a worthwhile future endeavour considering how the future of work is changing.

## Acknowledgements

This PhD thesis is a result of hard work, dedication, and perseverance. Along with the great and rewarding moments, there were also the harder times and obstacles. I could never overcome those if it wasn't for unfaltering support of the amazing people I had by my side and met along the way.

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**This thesis is dedicated to my beloved parents Giorgio and Yiota.**

Παπά μου και μάμα μου, αυτή η διατριβή είναι αφιερωμένη σε σας.

Σε σας, που με στηρίζατε από την αρχή μέχρι το τέλος, ακόμα και στις πιο δύσκολες στιγμές.

Σε σας, που ήσασταν πάντα στο πλευρό μου, με την αστείρευτη αγάπη σας, είτε συμφωνούσατε με τις επιλογές μου είτε όχι.

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Εύχομαι να σας έκανα περήφανους, όπως με κάνετε περήφανη εσείς κάθε μέρα που είστε οι γονείς μου!

Με απέραντη αγάπη,

Το Μαρούλι σας

# **Contents Listing**

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## **List of Empirical Chapters (Papers)**

### **Peer-reviewed publications:**

The following published paper forming this thesis represent original work conducted by the principal author. Study design, data collection, statistical analysis and writing were conducted by Maria Charalampous. Dr Christine Grant and Dr Carlo Tramontano advised on study design, data analysis and paper editing. Dr Evie Michailidis contributed to data extraction and paper editing.

1. Charalampous, M., Grant, C. A., Tramontano, C., & Michailidis, E. (2018). Systematically reviewing remote e-workers' well-being at work: a multidimensional approach. *European Journal of Work and Organizational Psychology*, 28(1), 51-73.

### **Manuscripts in preparation**

The following three manuscripts in preparation forming this thesis represent original work conducted by the principal author. Study design, data collection, statistical analysis and writing were conducted by Maria Charalampous. Dr Christine Grant and Dr Carlo Tramontano advised on study design , data analysis and paper editing.

1. Charalampous, M., Grant, C. A., & Tramontano, C. Developing the E-Work Well-Being Scale (EWW): A Multi-Dimensional Approach to Well-Being at Work. Manuscript in preparation for publication.
2. Charalampous, M., Grant, C. A., & Tramontano, C. "It needs to be the right blend": A qualitative exploration of remote e-workers' experience and well-being at work. Manuscript in preparation for publication.
3. Grant, C. A., Tramontano, C., & Charalampous, M.: 'What is wrong with not being restricted to a single work location? A further validation to the E-Work Life (EWL) Scale'. Manuscript in preparation for publication.

## List of conference presentations

Below are a set of accepted conference abstracts that stem from data collected during study for this doctorate degree at Coventry University

1. Charalampous, M., Grant, C. A., & Tramontano, C. 2019. Filling the puzzle: Using the E-Work Well-being scale (EWW) to determine links between remote e-working and cognitive weariness and psychosomatic conditions (oral presentation). EAWOP, June, Turin, Italy.
2. Charalampous, M., Grant, C., Tramontano, C. (2018). Developing the E-Work Well-Being Scale (EWW): A Multi-Dimensional Approach to Well-Being at Work (oral presentation). EAOHP 2018, 5th-7th September, Lisbon, Portugal.
3. Christine Grant, Emma Russell, Maria Charalampous (2018). The Development of an E-competency Framework to Support Agile Working (oral presentation). EAOHP 2018, 5th-7th September, Lisbon, Portugal.
4. Charalampous, M., Grant, C., Tramontano, C., Grunfeld, E. (2017). Exploring remote e-workers' affective well-being at work: A blurred picture (poster). EAWOP 2017, 17th-20th May, Dublin, Ireland.
5. Grant, C., Kinman, G., Charalampous, M., (2017) E-Worker Resilience: A competency-based approach to ameliorate the impact of technology on well-being (oral presentation). EAWOP 2017, 17th-20th May, Dublin, Ireland.
6. Charalampous, M., Grant, C., Tramontano, C., Grunfeld, E. (2017). Exploring the relationship between remote e-working and work-related well-being (oral presentation). BPS 2017 Division of Occupational Psychology Annual Conference, 4th-7th January, Liverpool, U.K.

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The present PhD thesis examines the remote e-working arrangement, and tries to determine the reality between:

### **The bright side...**

*“<sup>1</sup>My working life improved dramatically when I switched to remote e-working leading to me being much happier.”*

*“I love working remotely. It gives me the chance to manage my personal life much more effectively. I can still fulfil my expectations regardless of where I work. Everyone from director level down is offered the opportunity to work remotely. Equally we can go into the office if necessary. My workplace is over an hour away from home, and not having to commute is the best stress reliever. I feel so much more relaxed now I don't have to commute.”*

*“In truth, I find that splitting my work week - part office and part remote, I work more. But not out of obligation, because I want to. By remote working sometimes I save 3 hours per day of commuting, so immediately I do 3 extra hours, then usually beyond that too. Whilst retaining half week in the office, this keeps me abreast of everything, friendships, social life and face to face communication.”*

### **Or a darker side...**

*“I don't like working remotely - I'm not as productive and it negatively impacts on my mental health, as I get very isolated. I tend to try to go into the office most days for this reason, but my colleagues tend to work from home a lot, so sometimes there feels like little point going in. I feel pressure to answer emails over the weekend, as I'm in chains where other people are responding.”*

*“It is leading to a culture where we are never off- duty and it feels as if we are always expected to be the beck and call of work. It feels as if we are always expected to be at the end of our computers. End up having to write unnecessarily long e mails to explain things that could be done in a 5 min face to face to face conversation. It encourages knee jerk reactions to issues because there is no space to discuss and explore issues. Feel as if I couldn't work any faster / harder if I tried but it still isn't enough and the role models at a senior level reinforce this.”*

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<sup>1</sup> \*All quotes are taken from participants' additional comments provided in the main study- Online survey (Chapter 7)



# **Chapter 1: Introduction**

## **1.1. Overview**

This chapter outlines the rationale and sets the contextual framework of this present PhD thesis. Remote e-working as a modern, growing, and timely working arrangement is presented and discussed, along with its impact on individuals' lives, and in particular on their well-being at work. It is proposed that irrespective of a tremendous amount of literature on the topic, the lack of definitive findings restrict us from drawing accurate conclusions about how working in this way may affect individuals. Until 2012, there were no adequate measures which were particularly tailored to a remote e-working population. To fill this gap, Grant, Wallace, and Spurgeon (2011), developed the E-Work Life scale (EWL), which captures the important elements of individuals lives that are impacted by remote e-working. As discussed below, although the EWL scale did originally have a dimension called e-wellbeing, following validation checks this dimension was omitted. This PhD research is thus, aiming to develop a more detailed sister scale measuring well-being, namely the E-Work Well-being (EWW) scale. The EWW scale is framed within a multi-dimensional work well-being theoretical model (Van Horn, Taris, Schaufeli & Schreurs, 2004). The scale can not only be used by researchers to gain a greater understanding of the topic, but it can also be used by managers and organisations when monitoring remote e-workers' well-being at work.

## **1.2. The phenomenon of remote e-working and the future of work.**

Living in an era of increasing technological change has revolutionised the way people work (Eurofound, 2018). Remote e-working refers to work conducted at anyplace and anytime by using information and communication technologies (ICTs) to stay connected with colleagues and supervisors (Grant, Wallace, & Spurgeon, 2013). A recent report by

Eurofound and the ILO (2017) suggested that remote e-working is rapidly increasing across Europe. In addition, the Gallup organisation, a U.S. analytics and advisory company, has also supported the growth of the remote e-working phenomenon (Corbin, 2017). More explicitly, Corbin (2017) suggested that from 2012 to 2016, there was a four percent increase (from 39% to 43%) in the number of employees who worked remotely, for at least some of their working time.

Towards the end of this PhD research, the world faced the outbreak of the coronavirus disease (i.e., COVID-19), which was announced on the 12<sup>th</sup> March 2020 by the World Health Organisation (WHO) as a pandemic (WHO, 2020). In order to prevent and slow down the transmission of the virus, remote e-working policies were implemented by many organisations across the world. As according to Hern (2020), writing for The Guardian, *“COVID-19 could permanently shift working patterns as companies forced to embrace remote working by the pandemic find that their employees do not want to return to the office once the closures are lifted”*. This challenging time for the workplace not only highlights the importance and timeliness of this PhD project, but it also proposes that the COVID-19 outbreak may be a pivotal moment for remote e-working practices, changing drastically the future of work. There is a great need to support the e-wellbeing of remote e-workers some of which are new to this style of working.

Although remote e-working enables employees to work from multiple locations (Maitland & Thomson, 2014), an extensive amount of literature conducted within this population has mainly focused on homeworkers (e.g., Richardson & McKenna 2014; Sewell & Taskin, 2015; Vander Elst et al., 2017). However, the nature of work keeps changing with individuals now working from a variety of locations, beyond their home, such as cafes, trains, hotels, and customer sites (Hislop & Axtell, 2007; Maitland &

Thomson, 2014); and being more flexible due to the use of ICTs (Eurofound and the ILO, 2017). The amount of time individuals spend working flexibly varies. This implies the need for researchers to consider a greater variety of working patterns within remote e-workers, such as people who work full-time from home (Anderson, Kaplan, & Vega, 2015), and people who split their working time in a variety of work spaces (Morganson et al., 2010). The changing nature of the working environment has both changed how organisations operate and shifted individuals' expectations of their jobs. Corbin (2017) suggested that gaining control over when and how individuals work becomes essential for many individuals. Particularly, 51% of employees said that they would leave their organisation, if a new job could offer them flexitime, and 37% said that they would go for a new job if they would be able to have flexibility in their work location, at least part of their working hours. It would be interesting to see how these statistics change after COVID-19 as employers consider what jobs can now be done remotely and office space requirements. Chapter 2 provides additional information about the prevalence and statistics concerning remote e-working.

Regardless of the growth of remote e-working as an arrangement, it has been intriguing to observe organisations' decisions, such as Yahoo! and IBM to ban remote e-working (Boell, Cecez-Kecmanovic, & Campbell, 2016; Simons, 2017). In particular, a memo sent to Yahoo! employees in February 2013 declared: *"We need to be one Yahoo!, and that starts with physically being together. Beginning in June, we are asking all employees with work-from-home arrangements to work in Yahoo! offices"* (Swisher, 2013). This decision depicts the opposing opinions and the scepticism of some CEOs and organisations around remote e-working's effectiveness, and whether it is beneficial for employee outcomes. These results are also in line with previous findings suggesting that remote e-working may hinder knowledge sharing among colleagues, reducing

individuals' work satisfaction (Pyöriä, 2011), something that can harm workplace cohesion. Although this scepticism around remote e-working could potentially fade away as a result of COVID-19 pandemic discussed above, it is still worth acknowledging.

### **1.3. What is the overall impact on the individuals' lives and well-being at work?**

Scholars have extensively examined the impact that remote e-working can have on work-related outcomes. A meta-analysis by Gajendran and Harrison (2007) of 46 studies, including 12,883 individuals, illustrated that remote e-working was associated with increased perceived autonomy, lower levels of work–family conflict, increased job satisfaction, and improved performance. In contrast, turnover intentions were found to decrease, as well as stress linked to work and family roles. The increased flexibility that comes with remote e-working (Pearlson & Saunders, 2001; Maruyama and Tietze, 2012) is embodied in employees' freedom to decide when, where, and how to structure their work activities, which can then benefit their productivity cycles and preferred working times (Boell et al. 2016). Nevertheless, spending too much time e-working remotely has been suggested to lead to professional isolation, which was consequently linked to lower job performance (Golden, Veiga, & Dino, 2008). The perception of professional isolation can be caused by employees feeling that they were missing development activities such as interpersonal networking, informal learning, and mentoring (Cooper & Kurland, 2002). Social isolation in general, is one of the most prominent drawbacks discussed in relation to working away from colleagues and the typical office environment (Sewell & Taskin, 2015). This comes as no surprise considering employees' claims that face-to-face interaction plays a more intrinsic role when developing and maintaining workplace friendships, compared to other means of communication such as e-mail and instant messaging (Sia, Pedersen, Gallagher, & Kopaneva, 2014).

Allen, Golden, and Shockley (2015) intended to assess scientific findings, by evaluating how effective this way of working might be. Findings from their literature review supported a rather multi-faceted and complex impact that remote e-working had on individuals, with different spheres being impacted (e.g., well-being and work-life balance). For example, remote e-workers' health and well-being was found to be positively associated with reduced depressive and insomnia symptoms, daytime sleepiness, and incomplete recovery from work (Takahashi et al., 2011). However, it was negatively associated with stress and burnout symptoms (Grzywacz, Carlson, & Shulkin, 2008). Yet, remote e-workers could experience a more positive work-life balance due to the time flexibility their job offered (Maruyama, Hopkinson, & James, 2009). Good work-life balance was proved to be negatively linked to psychological strain, and positively linked to family and job satisfaction (Brough et al., 2014). Nevertheless, Ter Hoeven and van Zoonen (2015) suggested that whereas remote e-workers' well-being can be enhanced through improved work-life balance, increased control, and enhanced communications, it could still be harmed through increased interruptions (especially due to location flexibility). Finally, in terms of overall health, there is a gap in the current knowledge in regards to the extent to which remote e-working is impacting individuals' psychosomatic conditions (Eurofound and the ILO, 2017), as well as their health behaviours such as eating and exercise habits (Allen et al. 2015).

Therefore, one of the aims of this PhD thesis is to provide a more holistic and in-depth interpretation of how remote e-working may have an impact on individuals' work well-being. To achieve this, the present research engages with remote e-working literature from a multi-dimensional perspective (see section 1.4.2.), exploring the most important and relevant well-being dimensions. Simultaneously, this thesis will unravel underlying mechanisms which may contribute to the relationship between remote e-working and

well-being at work. A mixed method approach is used, analysing and presenting findings from a detailed review of the existing literature, a rich amount of qualitative narratives, along with quantitative data collected from two online studies.

#### **1.4. The importance of constructing scales to assess the remote e-working phenomenon**

Scholars have repeatedly investigated links between remote e-working and well-being at work (e.g., Anderson et al. 2015; Ter Hoeven & Van Zoonen, 2015), but this has always been achieved by using generic measures to assess well-being, which were not tailored to the remote e-working population. Moreover, more recently devised scales were concerned with issues including the new way people work and the increased use of technology embedded within it, such as technostress (Ragu-Nathan, Tarafdar, Ragu-Nathan, & Tu, 2008; Tarafdar, Ragu-Nathan, & Ragu-Nathan, 2007). In particular, Ragu-Nathan et al. (2008) argued that the use of ICTs can be linked to some stress (i.e., technostress creators), which can then be linked to decreased job satisfaction and decreased organizational and continuance commitment. Simultaneously, they proposed that organizational mechanisms can potentially decrease stress linked to ICT use (i.e., technostress inhibitors), which might in turn increase job satisfaction and organizational and continuance commitment. Developing scales specifically tailored to this population would benefit these individuals, through monitoring whether remote e-working affects their well-being at work in either a positive or negative way.

Taris and Schaufeli's (2015) review of well-being measures and definitions suggested that specific context focused measures can be more appropriate because they take into consideration the particular impact that context has on individuals. For example, it is proposed that working remotely, through the use of technology, brings specific challenges at individual, professional, and contextual levels which can potentially impact

on workers' well-being. Consequently, any existing well-being measures, even if they are domain specific (e.g., work-related well-being) and multi-dimensional would fail to identify those specific challenges and would not offer a deep understanding of remote e-workers' experience. Thus, developing a measure tailored to this population can capture the unique impact that remote e-working has on individuals' well-being, something that is not feasible with the use of global measures. In addition, organisations and supervisors would gain a greater insight into the impact that remote e-working may have on individuals. Furthermore, this knowledge is pivotal when identifying areas of improvement, developing strategies, and implementing interventions to increase well-being when individuals work away from office premises. This would allow the promotion and support of individuals' well-being and a more positive overall remote e-working experience.

Based on this premise, the E-Work Life (EWL) scale was developed (Grant et al., 2011), which focused on measuring the impact of technology on the psychological factors affecting remote e-workers. As discussed below, the current version of the scale does not fully capture *well-being* generating the need to develop a new measure, which will precisely measure all aspects of well-being (Grant et al., 2019). To date, there are currently no other available scales to assess remote e-workers' well-being at work. Hence, the originality of this present thesis is on its aim to develop the newly devised E-Work Well-being (EWW) scale to directly address this gap in the research. This thesis will, also, provide further validation checks of the EWL scale, as it can be a relevant scale to use alongside the EWW scale when gaining a broader understanding of the remote e-working experience.

#### **1.4.1. The development of the E-Work Life (EWL) scale: A integrated view of the remote e-working experience.**

A first attempt to create a composite measure of remote e-working has already been made by Grant et al. (2011) by developing the EWL scale. The scale was designed to be suitable for a wide range of remote e-workers who worked in a variety of locations, with different modes of work, and using a plethora of technological means. The EWL scale was designed to be applicable in a variety of organisational contexts, and for all levels within the organisation (individual, supervisor, and organisational). In their qualitative study exploring the psychological impact that remote e-working has on individuals, Grant et al. (2013) identified eight theoretical dimensions that are relevant to the remote e-working experience. This, then, led to the development of the 28-item version of the scale (see Appendix A). These eight theoretical dimensions were: *E-working effectiveness*, *E-job effectiveness*, *Management style*, *Trust*, *Work-life integration*, *Role management/conflict*, *Managing boundaries*, and *E-wellbeing*. Identifying, conceptualising, and defining dimensions are an essential part of the scale development process, as the scale needs to be grounded in evidence-based practice (DeVellis, 2016). Therefore, as a next step, Grant et al. (2013) identified three overarching concepts of the e-working experience that would allow the development of the EWL scale. These were: *Job effectiveness*, *Work-Life Balance*, and *E-wellbeing*. Subsequent work by Grant et al. (2019) included the additional research area of the *Relationship with the organisation*, to ensure that any organisational aspect impacting on the remote e-working is also covered in the scale. Table 1.1. expands on these four key research areas (providing the eight related dimensions in brackets).

The internal validity and reliability of the EWL scale was at first investigated using a sample of 260 remote e-workers (Grant et al. 2019). The Exploratory Factor Analysis (EFA) supported a 17-item version of the scale, with four underlying latent



variables/dimensions (see Appendix B). The first dimension included 5 items, portraying *Effectiveness/Productivity* (which was in line with the initially expected area of job effectiveness). The second dimension included 6 items, portraying *Organisational Trust* (which corresponded to the relationship with the organisation). The third dimension included 5 items portraying *Flexibility*, and items explicitly referred to flexible work arrangements, which is an essential benefit of e-working practices. The fourth dimension had 6 items portraying *Work-Life Interference* which included items belonging to both areas of work-life balance and e-well-being. All dimensions reported good Factor Determinacy scores (i.e., Work-Life Interference=.93; Productivity = .90; Organisational Trust =.86; and Flexibility =.84; Grant et al. 2019). As can be observed in this 17-item version of the scale (Appendix B), the e-well-being component is not adequately covered, as the remaining items are mostly covering the concept of work-life interference. Nevertheless, Grant et al. (2019) suggested that the substantial body of evidence confirming the relevance of well-being within remote e-workers (e.g., Anderson et al., 2015; Bentley et al., 2016; Kinnunen et al., 2017; Ter Hoeven & Van Zoonen, 2015) denotes the desirability for a new measure which would directly assess e-well-being. To address this gap, the present research has as an overarching aim to create the EWW scale, tailored to remote e-workers' well-being. The EWW scale can, as previously mentioned, be used alongside the EWL scale to capture a more holistic view of remote e-working. With a preliminary validation of the EWL scale being already available, this thesis aims to further validate the scale through Confirmatory Factor Analysis (Chapter 7).

#### **1.4.2. The development of a new scale: The E Work Well-being (EWW) Scale**

The first decision when developing the new EWW scale, involved identifying the best theoretical approach to well-being, which would inspire and guide the development

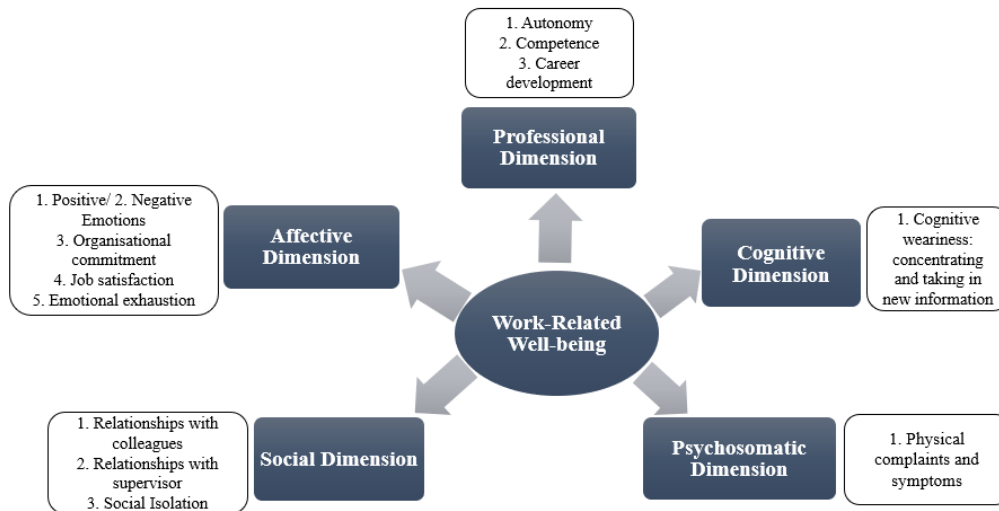
Table 1.1.

*Key research areas of the E-Work Life scale (Grant et al., 2013, Grant et al.,2019)*

Key research area ( <i>and related dimensions</i> )	What the research area includes.
Job Effectiveness ( <i>including e-working effectiveness, and e-job effectiveness</i> )	Includes the desired skills and competencies which are essential when remote e-workers are setting their work objectives and meet their performance targets.
Relationship with the organisation ( <i>including the management style, and trust</i> )	Focuses on the relationship between remote e-workers and their manager. The perception about this relationship is influenced by the trust that managers show to their employees when e-working remotely, and the levels of autonomy they grant them.
Work-Life Balance ( <i>including work-life integration, role management/conflict, and managing boundaries</i> )	Demonstrates how individuals navigate through their work and life roles and identities. In particular, it considers how individuals shift between differing roles, the degree to which they effectively manage boundaries between their work and personal lives, and efficiently integrate work and non-work demands when needed.
E-Well-Being ( <i>including e-well-being</i> )	Expands upon both the positive and negative impact that remote e-working may have on individuals' health and well-being. Typical issues discussed are the relief of stress relating to commuting to work and child-care; but simultaneously isolation of the individuals and difficulty in 'switching off' from work, as a result of e-working remotely.

of the items. In Chapter 2, a review of existing conceptualisations and models around well-being at work has been conducted and will be presented; comparing context-free, domain-specific constructs, affective, and multi-dimensional approaches to well-being. Based on this review, Van Horn et al.'s (2004) well-being at work model was identified as an appropriate model to guide the collation of relevant literature. Figure 1.1. introduces

Van Horn et al.'s (2004) model, presenting its five distinct dimensions (i.e., affective, social, cognitive, professional, and psychosomatic) and their sub-dimensions. A more expanded discussion around the model can be found in Chapter 2. This model was subsequently used to develop the EWW items, with some minor alteration to its dimensions. These alterations will be discussed in more depth in subsequent chapters.



*Figure 1.1.* Adapted theoretical framework: Van Horn et al.'s (2004) work-related well-being model

The changes linked to remote e-working practices are anticipated to be specific, pervasive, and broad. Thus, Van Horn et al.'s (2004) model which frames the present PhD research covers the demand for specificity (i.e., domain specific model), as well as the need for pervasiveness and the broad perspective (i.e., a multi-dimensional model). When considering work related multidimensional well-being models, Van Horn et al.'s (2004) one seemed to be potentially ideal to capture all the complexity of workers' experience when working remotely. The validity of this model in framing the present research became even stronger and clearer, following the systematic literature review (see Chapter 2) and the qualitative study (see Chapter 4). Hence, Van Horn et al.'s (2004) well-being model has proposed to provide an effective lens to analyse e-workers' experience.

### **1.5. Justification and originality of the PhD research**

This PhD provides an original contribution to the field of remote e-working by building on previous research including the E-Work Life (EWL) scale (Grant et al., 2011). The development of the E-Work Well-being (EWW) scale offers a combined and new way of measuring well-being in this population. Particularly, it provides a holistic way of adapting well-being measures in this area to the specific context of remote e-working. Although the EWL scale did this to some extent, given the heightened need to focus on well-being related to remote e-workers; the scale both fills this gap and brings together a body of research in the area, whilst validating and building on the previous EWL scale. The novelty of the EWW scale provides individuals, supervisors and organisations a means to measure in one scale the well-being of their remote e-workers. There are many facets to well-being and it is important to explore these in one holistic scale. Other measures are not adapted for the remote e-working context, something which is addressed by developing the EWW scale.

### **1.6. Summary and overall aims of the present research**

The current research, in making use of a mixed methods approach, provides a deeper exploration of the topic of remote e-working and the impact it has on individuals' well-being at work. The incorporation of robust methodology allows for clarification and explanations of the existence of paradoxical findings. The original contribution of this study is the development of the EWW measure which is a unique and more inclusive instrument monitoring and assessing remote e-workers' well-being at work. This scale has strong theoretical foundations and is of relevance to both researchers and organisations, in order to gain a greater understanding of the remote e-working arrangement. It can be used in conjunction with the EWL scale to capture a greater breadth of the remote e-working experience.

In summary, the present research had the following overall aims:

- To develop a new scale (i.e., E-Work Well-being scale) to measure well-being within a remote e-working population. Following all the scale development steps suggested by Classical Test Theory (as outlined by DeVellis, 2016), and proving the scale's validity and reliability.
- To assess and encapsulate the most appropriate and theoretically robust framework to support the concept of well-being at work within a remote e-working population; by expanding on Van Horn et al.'s (2004) five-dimensional model.
- To provide a holistic understanding of remote e-workers' well-being at work, exploring the most important and relevant dimensions, and simultaneously unravelling underlined mechanisms which can play a role. This will allow a greater insight to be gained into current paradoxical findings, responding to whether remote e-working can benefit or harm individuals' well-being at work.
- To provide further validation of the E-Work Life (EWL) scale (Grant et al., 2011), as this is a relevant scale to be used alongside the E-Work Well-being scale to gain a greater understanding of the over-arching remote e-working experience.

### **1.7. Outline of thesis chapters**

This thesis comprises 8 chapters. The present chapter (Chapter 1) introduces the background of the research, justifying its rationale and contribution. In particular, this chapter elaborates on the concept of remote e-working, its increasing prevalence, and how it affects employee and organisational outcomes, in terms of individuals' well-being. The necessity to develop an additional measure and tool assessing these employees' experiences is also discussed. The aims of the PhD were also clearly stated along with a brief summary of the other thesis' chapters, provided below.

*Chapter 2 Systematically Reviewing Remote E-workers' Well-being at Work: A Multi-dimensional Approach.* This chapter provides a detailed review of relevant literature on remote e-working and well-being which is essential in gaining greater insight into the topic. Findings are collated and presented using Van Horn et al.'s (2004) five-dimensional well-being at work model, based on which the EWW scale was developed in subsequent chapters.

*Chapter 3: Research Strategy, Methodology and Design.* This chapter expands on and clarifies the methodology implemented in the current PhD research. It elaborates on the key steps that are followed when developing and evaluating a scale using a classical measurement theory (CTT), as presented by DeVellis' (2016). Factor analysis methods to test and reveal the latent constructs are acknowledged and discussed, as well as the important concepts of validity and reliability. This chapter also provides a strong rationale for using a mixed methods approach. Specifically, it is proposed that combining findings from a systematic review and qualitative semi-structured interviews can greatly inform the development of the new EWW scale. This will form the basis of the subsequent step in which the scale will be objectively assessed adopting a quantitative approach.

*Chapter 4: "It needs to be the right blend": A qualitative exploration of remote e-workers' experience and well-being at work.* This chapter presents the findings of a qualitative study examining remote e-working experiences and its impact on well-being as it was presented in interviewees' narratives. Its aim is twofold: firstly, to enable the EWW item development by exploring the links between remote e-working and well-being at work; and secondly, to increase knowledge around areas of remote e-working and well-being that are understudied (e.g., psychosomatic conditions, and cognitive weariness). Thematic analysis is implemented for interpreting and organising the data into themes.

*Chapter 5: E-Work Well-being item generation.* This chapter outlines the item development process, drawing upon both the qualitative data and existing validated measures which assess well-being. The item reduction process is discussed, including experts' feedback, based on which the first reduction of items relied upon.

*Chapter 6: Pilot study to provide initial validation of the E-Work Well-being scale.* This chapter completes the initial validation of the newly devised EWW scale, assessing its construct and predictive validity. Exploratory Factor Analysis (EFA) and Exploratory Structural Equation Modeling (ESEM) are performed to explore both sub-dimensions independently, and EWW scale's overall factor structure. This chapter examines whether dimensions are aligned with the theoretically proposed constructs. The analysis aims to inform potential amendments to the scale, identifying any problematic items.

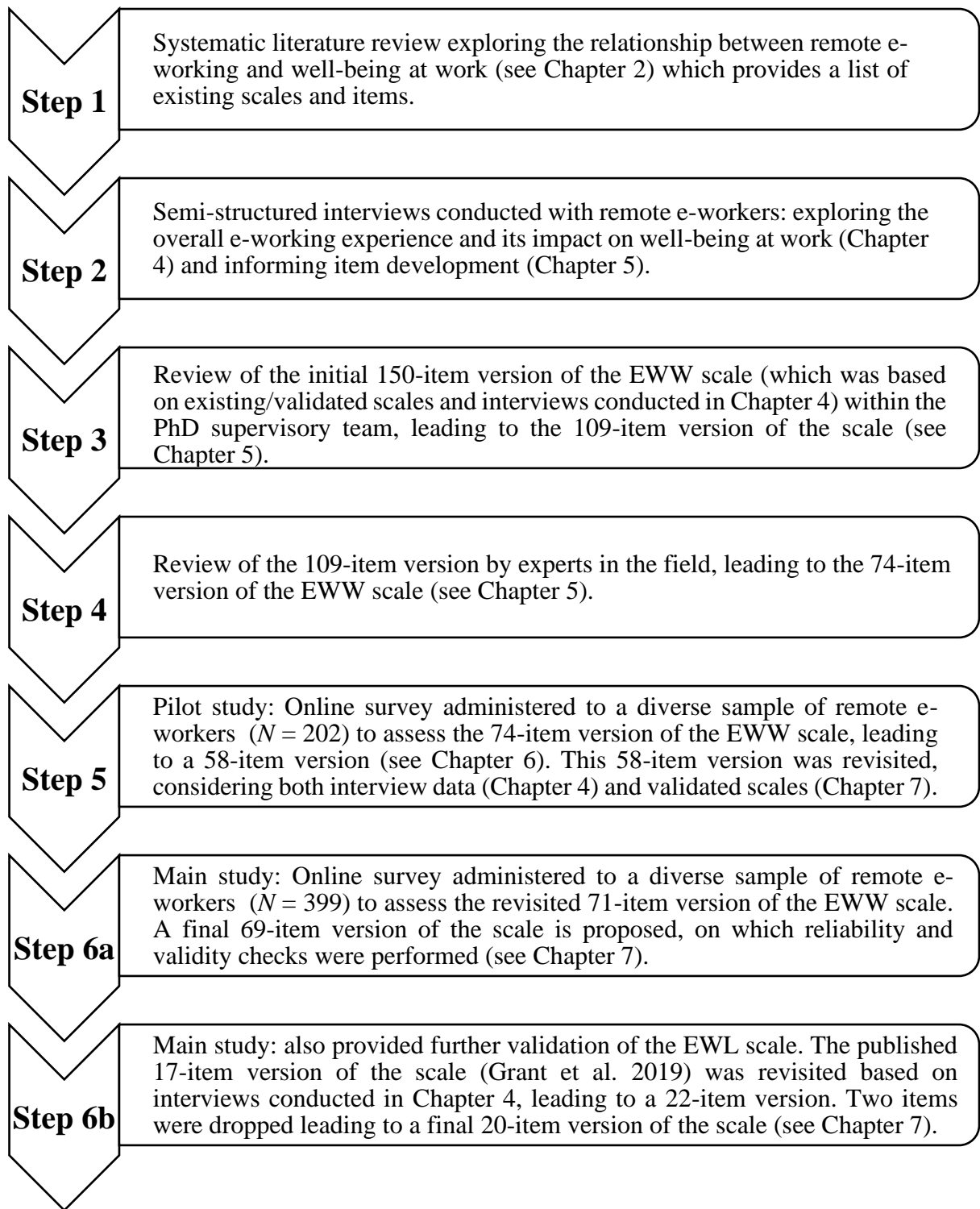
*Chapter 7: Main study to provide additional validation of the E-Work Well-being scale and further validation of the E-Work Life scale.* This chapter comprises amendments to the EWW items, predominantly based on the pilot study findings (see Chapter 6) as well as drawing upon the qualitative findings (see Chapter 4). The chapter also presents Confirmatory Factor Analyses (CFA), which allows the exploration and discussion of differing models when conceptualising well-being at work and provided additional validation to the EWW scale. Construct and predictive validity checks of the EWW scale are also presented. The chapter also refines the EWL scale, capitalising on its preliminary validation (Grant et al. 2019) and the qualitative study of this thesis (Chapter 4) to develop some additional items and consequently, undertakes further validation checks.

*Chapter 8: Discussion of the E-Work Well-being. Theoretical and practical implications.* This chapter provides a detailed discussion about the newly devised EWW scale developed and validated in this thesis. The overall contribution of this research, in terms

of how it fits with extant literature will be discussed along with the implications its findings have on theoretical knowledge and practise. The strengths and limitations of this research are acknowledged, suggesting future directions.

The flow chart provided below (Figure 1.2.) presents the steps followed when developing and validating the E-Work Well-being (EWW) scale; along with further validation of the E-Work Life (EWL) scale.





*Figure 1.2.* Flow chart showing scale development steps followed in this research.

## **Chapter 2: Systematically Reviewing Remote E-workers'**

### **Well-being at Work: A Multi-dimensional Approach<sup>2</sup>**

The practice of remote e-working, which involves work conducted at anyplace, anytime, using technology, is on the increase. The aim of this systematic literature review is to gain a deeper understanding of the association between remote e-working, within knowledge workers, and the five dimensions of well-being at work: affective, cognitive, social, professional, and psychosomatic. Sixty-three studies employing quantitative, qualitative, and mixed methods designs have been included in the review. Findings indicate that we know more about remote e-workers' affective state, and their social and professional life than we know about their cognitive functioning and psychosomatic conditions. Whilst the research indicates a positive focus there are some negative aspects of this way of working which are highlighted within this review; such as social and professional isolation, and perceived threats in professional advancement. This review may be of great importance for academics, to continue theoretical advancement of research into remote e-working, and practitioners, to implement and manage remote e-working attitudes and policies more effectively.

*Keywords:* remote work; e-work; telework; work-related well-being; well-being; systematic review

#### **2.1. Introduction**

The practice of employees working remotely, away from the conventional workplace, has become a varied and fast changing phenomenon (Eurofound and the ILO, 2017). This

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<sup>2</sup> Notes. This is a published paper: Charalampous, M., Grant, C. A., Tramontano, C., & Michailidis, E. (2018). Systematically reviewing remote e-workers' well-being at work: a multidimensional approach. *European Journal of Work and Organizational Psychology*, 28(1), 51-73. Regardless of the small risk linked to desk-based research, ethical approval was granted in order to conduct this review- see Appendix C for the Certificate of Ethical Approval.

practice is enabled by an explosion in the technological means available to individuals and employed by organisations (Ter Hoeven & Van Zoonen, 2015). The rapid development of information and communication technology (ICT) has caused several shifts in working life (Allen et al., 2015). Specifically, individuals involved in knowledge work can now access their work from anywhere and anytime through their laptops, tablets, and smartphones (Maitland & Thomson, 2014).

However, existing empirical evidence on the association between flexible working practices (including remote e-working) and employee well-being are not conclusive (De Menezes & Kelliher, 2011). For instance, Ter Hoeven and Van Zoonen (2015) claimed that the more flexibility individuals had around their work location, the greater work-life balance, job autonomy, and effective communication they experienced, thus increasing their well-being. Nevertheless, further research has suggested that individuals who use remote e-working practices may frequently experience feelings of guilt (Moe & Shandy, 2010) and may overwork to reciprocate the permitted flexibility (Chesley, 2010). Consequently, remote e-working may become more unfavourable since individuals in fact intensify their work activity (Kelliher & Anderson, 2010). For example, remote e-workers may engage in behaviours such as exchanging emails during non-working hours, a practice that has been linked to stress (Chesley, 2014) and blurred home-work boundaries (Tietze & Musson, 2005).

Overall, organisations, employers, and managers cannot yet rely on clear evidence that remote e-working is indeed beneficial for employees' well-being. Due to the lack of agreement on whether remote e-working benefits well-being at work or not, the review is guided by the following generic research question: Does e-working remotely link to knowledge workers' work-related well-being, and if so, how is this link different to each of the work-related well-being's dimensions (i.e., affective, social, cognitive,

professional, and psychosomatic)? A more up-to-date systematic review of the literature about remotely accessed work which embeds technology and its relation to employees' outcomes is currently not available (McDowall & Kinman, 2017). This study is therefore valuable as it provides a critical overview of qualitative, quantitative, and mixed methods research to shed light upon how the increasingly prevalent remote e-working can link to well-being at work. To provide a better framework for studying remote e-working, the next sections discuss: (1) terms and definitions of knowledge working, (2) alternative terms of the remote e-working arrangement, (3) prevalence statistics, (4) related literature about remote e-working and work-related well-being, and (5) a multi-dimensional model of well-being at work which has been used as a theoretical framework to organise and guide the discussion of the literature (Van Horn et al., 2004).

## **2.2. Knowledge Workers: Terms and Definitions**

Knowledge workers are defined as employees who have to acquire, create, and apply knowledge for the purposes of their work (Davenport, Jarvenpaa, & Beers, 1996). Their work is characterised by abstract production (El-Farr, 2009), and low level of standardisation (Pyöriä, 2005). It should be noted that the differentiation between knowledge workers and non-knowledge workers is debatable, as researchers suggest that all types of work involve some level of 'knowledge' (Alvesson, 2001). However, many researchers "agree that knowledge work is less tangible than manual work and that workers' brain comprises the means of production" (Ramírez & Nembhard, 2004, p. 605). Likewise, Frenkel, Korczynski, Donoghue, and Shire (1995) suggested that knowledge workers use more theoretical or abstract knowledge (e.g. employees working in IT, finance, and research) whereas routine workers rely on more contextual, less intellectual, and less creative knowledge (e.g. manual labour workers). Additionally, knowledge workers are often autonomous, having freedom around their working methods and

practices (Pyöriä, 2005). They tend to use ICT which allows checking emails, taking business calls, and generally working on their job tasks while being away from the office (Hislop, 2013). Lastly, knowledge workers are gradually working in a more flexible way to both increase work efficiency (Parasuraman & Greenhaus, 2002), and to enable a better balance of work and life demands (Bentley & Yoong, 2000).

### **2.3. Remote E-working Terms and Definitions**

One of the first terms introduced to refer to the remote working arrangement was telecommuting (Nilles, 1975). In particular, it was used to describe individuals working from home using technology to communicate back to their workplace. Since then, it has been extensively used along with ‘telework’ in the US (Madsen, 2001), to refer to all types of work performed outside a head office but still linked to it (e.g., Bailey & Kurland, 2002; Golden & Veiga, 2005). In Europe, the term ‘e-work’ has been generally used to describe work that is conducted virtually. Kirk and Belovics (2006) defined e-workers as full-time, home-based telecommuters who work and communicate mainly through electronic mediums (e.g., corporate intranets and e-mails), having very little face-to-face interaction with their head office location or their colleagues and supervisors. Although, home-based telework has traditionally been the most common type of remote working (Halford, 2005), in most recent years there has been an increase in the number of people who work in more than one location (Eurofound & ILO, 2017). ‘Remote e-working’ is a broader term, used to describe “work being completed anywhere and at any time regardless of location and to the widening use of technology to aid flexible working practices” (Grant et al., 2013, p. 3). According to this definition work can be conducted from home, company sites, hotels, and airports. The current study will, thus, employ ‘remote e-worker’ as an umbrella term, including any employee who firstly spends time away from the traditional office, and secondly uses ICTs to access work (Grant et al.,

2013). It is worth clarifying that, individuals who are hot-desking, or in other words have no assigned desks and they work from any desk that happens to be vacant (Millward, Haslam, & Postmes, 2007) are not covered by this definition. This is because employees may still be in their office premises. In other words, the remote element which comprises work conducted away from the office environment (such as home and cafes) may be absent from the hot-desking definition. This element of remoteness is important though, as the experience individuals get when surrounded by colleagues (who are also hot-desking) is different from the experience they get when working from remote locations. Millward et al. (2007) found that hot-desking did not marginalise or alienate employees; but instead changed the primary focus of identification (as these individuals identified more strongly with the organization rather than with their team). Remote e-working was chosen over the well-used term of telecommuting, as telecommuting does not include employees who are very mobile (e.g. employees working mainly from customer sites; Allen et al. 2015). This review will specifically focus on knowledge workers who, as described below, are most likely to be influenced by remote e-working; excluding, for example, manual labour workers.

#### **2.4. Prevalence and Statistics**

In an online worldwide poll conducted by Reuters/Ipsos in 2012 across 24 countries, including the U.K., Australia, South Africa, and U.S., approximately one in five employees reported e-working remotely regularly (Reaney, 2012). According to the American Community Survey (ACS) the largest American companies around the world (Fortune 1000) have mobile workers who spend 50-60% of their time away from their desks (Lister, 2016). Additionally, a recent report by Eurofound and the ILO (2017) presented that, in 2015, 3% of employees were mainly working from home, 10% occasionally worked away from their company premises and made high use of ICTs, and

finally, about 5% worked predominantly away and made high use of ICTs. Statistics and prevalence rates provided by the Eurofound and International Office report (2017) clearly show that remote e-working is increasing at a rapid pace across Europe. A few representative examples are: France, where remote e-workers increased from 7% in 2007 to 12.4% in 2012; and Sweden where remote e-workers' increased from 36% in 2003 to 51% in 2014. Felstead and Henseke's (2017) review of the 2015 Labour Force Survey (U.K.) suggested that working away from a traditional office, at least one day a week, increased from 13.3% in 1997 to 17.1% in 2014. They also highlighted that high skilled (14%) and middle skilled workers (16%) are the most likely to work away, as opposed to factory-based workers (about 8%).

## **2.5. Remote E-working and Well-being at Work for Knowledge Workers**

Remote e-working may potentially link to knowledge workers' well-being at work in opposing ways. Knowledge workers can benefit by working away from a traditional office environment as the nature of their work requires concentration on individually-based tasks, eliminating interruptions (Mazzi, 1996). It is, thus, not surprising that research showed that when knowledge workers were able to e-work remotely, they are more satisfied with their job, more committed to their organisations, experiencing less stress linked to day-to-day demands of the office and commute (Kelliher & Anderson, 2010). However, knowledge workers' jobs often require some level of interaction with their colleagues (e.g., when working on group projects; Mazzi, 1996) which may be challenged by physical and temporal separation (Lautsch, Kossek, & Eaton, 2009). Individuals thus claimed that they missed office interactions (Grant et al., 2013), and felt isolated as they could not share concerns they had with colleagues (Mann & Holdsworth, 2003). This may then lead to limited access to social support that is crucial in increasing employee engagement (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009), and well-

being (Rothmann, 2008). Additionally, remote e-working is an arrangement which enables an autonomous way of working (Suh & Lee, 2017), which is aligned with the nature of knowledge work (Newell, Robertson, Scarbrough, & Swan, 2009). Nevertheless, knowledge workers need to seek information, opinions and guidance from their supervisors or colleagues, working through issues together and sharing ideas (Bentley & Yoong, 2000). In order to maintain contact and meet their job expectations, knowledge workers heavily rely on ICTs which allow them to stay connected when working from different locations (Middleton, 2007). Consequently, they reported working long hours (Grant et al., 2013) something that made it harder to switch-off from work (Kossek, Lautsch, & Eaton, 2009). This is a phenomenon that intensifies in an ‘always on culture’, where individuals are expected by their supervisors to be constantly available, feeling obliged to follow the strong norms set by their colleagues who are also connected (Derks, Duin, Tims, & Bakker, 2015, p. 170). These behaviours can impair individuals’ ability to switch-off from work, translating into poor well-being and health problems (Kompier, Taris, & Van Veldhoven, 2012). Hence, this systematic review aims to collate all relevant studies and any equivocal findings, to elucidate how remote e-working relates to knowledge workers’ well-being at work.

## **2.6. Conceptualisation of Well-being at Work in the Current Review**

Taris and Schaufeli (2015) in their theoretical overview underlined that conceptualisations of well-being at individual levels can be categorised on two dimensions: a) whether they consider well-being as a context-free (e.g., general quality of life) or as a domain-specific concept (e.g., work-related well-being) and b) whether they operationalise well-being mainly as an affective state or as a multi-dimensional construct. Following their overview, the authors suggested that a domain specific and multi-dimensional conceptualisation of well-being is preferable (Taris & Schaufeli,



2015). Firstly, when well-being is examined as a domain-specific concept, the associations with its antecedents are stronger (Warr, 1987; 1994). Hence, conceptualising work well-being as a domain specific phenomenon may provide a better understanding of the role that specific work characteristics play on employees' well-being (Warr, 1994). Secondly, widespread empirical support has evidenced well-being as a multi-dimensional concept and various models have been proposed. For instance, Warr (1987; 1994) proposed that well-being consists of the affective state of individuals, their aspirations, the degree of their autonomy, and how competent they perceive themselves. Alternatively, Ryff (1989; Ryff & Keyes, 1995) suggested that well-being comprises of self-acceptance, autonomy, environmental mastery, positive relations with others, personal growth, and purpose in life. Following Taris and Schaufeli's (2015) recommendation, a multidimensional work-related theoretical model of well-being was adopted to frame the present literature review, and to synthesise and interpret relevant research.

In particular, we referred to Van Horn et al.'s (2004) model that is rooted in Ryff's and Warr's models. Specifically, although Van Horn and colleagues recognised the affective dimension as central for workers' well-being, they contended that other dimensions are similarly relevant. Hence, they proposed that work-related well-being includes five correlated dimensions: affective, professional, social, cognitive, and psychosomatic, supporting the adoption of a multi-dimensional approach. Their theoretical model was supported by analyses conducted on a large sample of Dutch teachers.

The affective dimension according to Van Horn et al. (2004) comprises emotions, job satisfaction, organisational commitment, and emotional exhaustion. Alternative theoretical models (e.g. subjective well-being, Diener, 1984; Diener, Oishi, & Lucas,

2003) considered job satisfaction as a cognitive component of well-being. Previous research (Brief & Weiss, 2002) suggested that job satisfaction has not only an emotional aspect (i.e., how people feel about their jobs) but also a cognitive aspect (i.e., how they evaluate their jobs). Nevertheless, Van Horn et al. (2004) provided empirical support for their theoretical model showing that the aforementioned constructs loaded onto the same overarching factor they identified as affective well-being. Warr (1987; 1999) also suggested that workplace well-being should be considered according to three main axes: pleasure-displeasure, anxiety-comfort, and depression-enthusiasm. In this model, the first axis is considered of central importance and, as claimed by the same author, “its positive pole (...) is often examined in terms of satisfaction or happiness” (Warr, 1999, p. 393). Daniels (2000), capitalising on Warr’s (1999) theory and integrating further contributions from the organisational literature, provided empirical support for a five-factor model of work related affective well-being (i.e., anxiety-comfort, depression-pleasure, bored-enthusiastic, tiredness-vigour, and angry-placid). Overall, this theoretical and empirical evidence seems to support Van Horn et al. (2004)’s model.

The remainder of the well-being dimensions considered in Van Horn et al. (2004) model are unequivocal. The second dimension is the cognitive well-being which comprises cognitive weariness, that is, individuals’ difficulty taking up new information and concentrating. The third dimension is the social well-being which comprises the degree to which individuals function well in their social relationships at work. The fourth dimension is the professional well-being which comprises autonomy, aspiration, and competence. Lastly, the fifth dimension is the psychosomatic well-being which comprises any health complaints that individuals may have such as headaches, stomach aches, and musculoskeletal issues.

This review construes these dimensions as suggested. However, some adjustments

were made in regard to the cognitive dimension, given the specific focus on remote e-working. In particular, switching-off from work is added by authors of this review as a complementary element to cognitive weariness. This decision was based on the fact that remote e-workers heavily depend on ICT use (Leonardi, Treem, & Jackson, 2010), which often makes it difficult for individuals to stop thinking about work and psychologically detach from it (Kinnunen et al., 2017). Therefore, being unable to switch-off from work is expected to indicate how cognitively weary individuals are, making its inclusion in the cognitive well-being dimension justifiable.

Summing up, this systematic review uses this revised Van Horn et al.'s (2004) model, as a theoretical framework, to gain a broader understanding of the association between remote e-working and work related-well-being.

## **2.7. Method**

The current systematic review provides a narrative synthesis of quantitative, qualitative and mixed methods research (Petticrew & Roberts, 2006). This type of review is particularly valuable when systematically collating and reviewing all the evidence around a growing topic, which has been given sparse or ambivalent evidence (Petticrew & Roberts, 2006). Due to the heterogeneity of the studies included in this review (e.g., slightly different definitions, well-being constructs, and type of evidence) a statistical summary and thus a meta-analysis was not feasible. The authors will attempt to interpret the qualitative evidence and examine the quantitative evidence obtained. A robust systematic review protocol was drafted and registered with the PROSPERO database, in February 2016. The protocol followed the Preferred Reporting Items for Systematic reviews and Meta-Analyses for Protocols 2015 (PRISMA-P 2015) guidelines checklist (Moher et al., 2015).

### **2.7.1. Searches**

A search strategy was created after an initial literature review, collection of keywords from relevant studies, and discussion between the review team. Based on the established search protocol, scientific journals from psychological, social, management, health, and technological fields of study were searched. Relevant literature was identified by searching seven electronic databases namely: PsycINFO, PsycARTICLES, PubMed, Academic Search Complete, Applied Social Sciences Index and Abstracts (ASSIA), Business Source Complete, and CINAHL. To ensure literature saturation, reference lists of included studies or relevant reviews that were identified through the search were also scanned. Additionally, authors' personal files were searched to warrant that all relevant material had been captured. There were some limits imposed on the search, particularly studies had to be published between 1995 and 2017, be in English language, and peer-reviewed. The selection of 1995 as a cut-off year was based on an increased interest in remote e-working in the mid 1990's (Rognes, 2002) and the National Telecommuting Initiative Action Plan that was established in the US in 1996 to promote this way of working (Harrington & Walker, 2004). Appendix D presents the PsycINFO search strategy, which was adapted respectively to the syntax and subject headings of the other bibliographic databases.

### **2.7.2. Participants/population**

The current review has included studies conducted within knowledge employees, as defined previously in the introduction section, who are e-working remotely. Consequently, workers who predominantly rely on contextual knowledge, or use action-centred skills and are in some way uncreative, as a result of having to follow standard procedures (e.g., manual labour workers; Frenkel et al. 1995) were excluded. When it comes to the remote e-working aspect this review included employees who are: (a)

spending at least one day of their working time away from their office (e.g., home, another company site, hotel or train), and (b) making use of ICTs to enable them to perform their working tasks. This definition excluded home-based work such as farming or piecework which does not encompass ICT use to enable performance during work activities (Sullivan, 2003). In other words, making use of technology when working remotely was considered to be fundamental. Studies were excluded if they had not explicitly presented findings on remote e-working but reported findings of flexible working in general instead (e.g., including flexitime). Due to the large number of studies returned by the search, extra exclusion criteria were imposed to the initial protocol. Specifically, self-employed remote e-workers and freelancers were excluded. The reason is that these employees often do not have a concise long-term belonging to a specific organisation (Fersch, 2012), and no formal colleagues to interact with (Hislop et al., 2015). Disabled employees were also excluded to make sure that none of the health issues identified were related to employees' disability.

### **2.7.3. Type of included studies**

The review has sought a broad range of studies including: cross sectional studies, longitudinal studies, qualitative research, case reports, and quasi-experimental research. Three meta-analyses were also included, whereas narrative literature reviews were not due to their subjective nature, and potential lack of data (Petticrew & Roberts, 2006). There are three points to note with regards the three meta-analyses included. Firstly, not all of the studies they comprised were aligned with this review's purpose; therefore, only specific findings were presented. Secondly, they included studies conducted before 1995, as well as grey literature and dissertations. It is acknowledged that this was not in line with this review's criteria. However, an exemption was made as meta-analyses can provide strong evidence (Petticrew & Roberts, 2006), which can bring insightful

information into this review's content. Thirdly, none of the meta-analyses examined all of the discussed work-related well-being dimensions, nor they have included studies conducted in the same year range. Therefore, the present review contributes beyond these meta-analyses, offering a broader and a more up-to-date understanding of remote e-workers' well-being at work.

#### **2.7.4. Data extraction (selection and coding)**

##### ***2.7.4.1. Selection of Studies***

As outlined in the search flow-chart in Figure 2.1., retrieved articles ( $N = 3082$ ) were exported into RefWorks database and duplicated articles were removed ( $N = 63$ ). The lead review researcher did an initial assessment of the identified papers by screening the studies' titles, keywords and abstracts against the inclusion and exclusion criteria described above (see Table 1.1. for a summary).

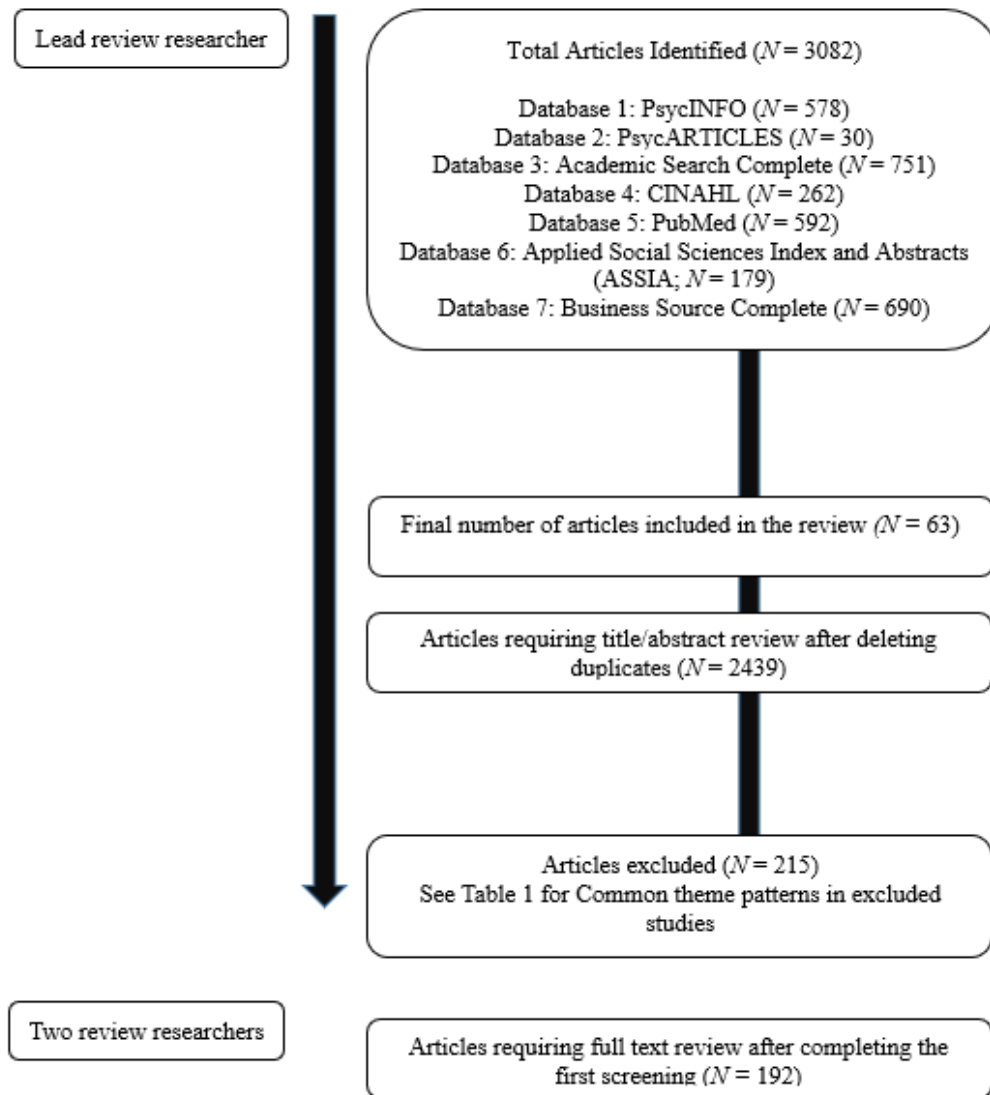


Figure 2.1. Systematic review flow chart.

In cases where the decision to include one article or not could not be made by just the title, keywords and abstract (e.g., when flexible working was not clearly defined) then the article was retrieved and skim-read before making a decision. References were grouped into two categories namely: a) 'eligible' or b) 'not eligible' for inclusion. Once the first screening was finished, full texts of 'eligible' articles ( $N = 215$ ) were retrieved, and inclusion and exclusion criteria were again reapplied. The articles that did not meet the

inclusion criteria were excluded. The rest of the research team were advised throughout the whole process, and any uncertainties were resolved. Finally, a total number of 63 studies were set as eligible to be included. Table 2.2. presents the common theme patterns in excluded studies.

Table 2.1.

*Inclusion and exclusion criteria.*

	Inclusion criteria	Exclusion criteria
(1)	This review included knowledge employees: individuals who acquire, create and apply knowledge for their work purposes. Their daily work tasks should mostly involve some intellectual skills and creativity.	Employees who were doing routine jobs, using mostly contextual knowledge or action-centred skills and following standardised procedures (e.g., manual labour workers) were excluded.
(2)	This review included employees who were making use of remote e-working. These employees were: (a) spending at least one day of their working time away from their office (e.g., home, another company site, hotel or train), and (b) making use of ICTs to enable them to perform their working tasks.	Home-based work such as farming or piecework which does not encompass ICTs use to enable the performance during work activities was excluded.
(3)	A broad range of studies was included: cross sectional studies, longitudinal studies, qualitative research, case reports, quasi-experimental research and meta-analyses.	Narrative literature reviews were excluded.
(4)	This review included studies that were published between 1995 and 2017, were peer-reviewed and in English language.	Studies were excluded if they had not explicitly presented findings on remote e-working; but had reported findings of flexible working in general instead (e.g., including flexitime).
(5)		Disabled employees were excluded.
(6)		Self-employed remote e-workers and freelancers were excluded.



Table 2.2.

*Common theme patterns in excluded studies.*

- 
- (1) Articles focusing on care home workers/nurses and service delivery within health care services; as these individuals' work tasks were mainly focusing on domestic aid, as well as supportive and technical nursing care to individuals.
  - (2) Research on tele-health/e-health, referring to care via online sources (e.g., video house calls, internet delivered cognitive behavioural therapy)
  - (3) Results on school homeworking instead of working tasks taking place at home
  - (4) Flexible working arrangement aimed at accommodating employees with different kind of illness
  - (5) Literature on remote worksites and manual labour employees working to oil, gas and mining industry whose nature of work involves a high level of standardisation
  - (6) A more generic assessment of flexible working arrangements which may include flexitime, shift working, job sharing, part time work and compressed workweeks. In these studies, flexible working is very broadly conceptualised, something that makes it hard to distinguish differences between arrangements.
  - (7) Virtual teams in educational contexts or gaming
  - (8) Investigated concepts and phenomena around virtual teams such as leadership. In these studies the relationship between remote e-working and well-being at work was not the central focus.
  - (9) Research on topics related to remote e-working other than well-being: such as work-life balance or work-family conflict, management and training
  - (10) Research focusing on populations other than those in employment (e.g., undergraduate students)
  - (11) Articles about telecentres or telecottages as places that rural people can visit for educational and social purposes
  - (12) Engineering literature (e.g., beam finite element, thermodynamics and elasticity, laminated materials)
  - (13) Book reviews, periodical, and not peer reviewed articles
- 

#### ***2.7.4.2. Data Extraction and Management.***

The lead review researcher and a second review researcher extracted data from included studies into a pre-defined data extraction form, and the review team provided assistance, support and advice when necessary.

### **2.7.5. Risk of bias (quality) assessment**

In order to eliminate the risk of bias, the Mixed Methods Appraisal Tool (MMAT) was used, assessing the methodological quality of the included articles. The MMAT tool provides researchers with certain criteria to assess the methodological quality of diverse studies (i.e., quantitative, qualitative and mixed methods; Pluye, Gagnon, Griffiths, & Johnson-Lafleur, 2009). This tool was chosen over others due to a lack of validated appraisal tools for mixed methods studies or reviews outside MMAT (Crowe & Sheppard, 2011; O’Cathain, 2010). The MMAT tool includes two initial and general screening questions which have to be answered positively for further appraisal to be appropriate. Following the screening stage, there are four criteria upon which studies are evaluated. The criteria for quantitative evidence are concerned with a relevant sampling strategy, appropriate measurements, representative sample, and acceptable response rate (60% or above). The criteria for qualitative evidence are concerned with relevant sources of data used, relevant process of analysing data, and consideration of the findings in relation to the context and researchers’ influence. Each study can achieve a lower score of 25% (\*) when one criterion is met and a higher score of 100% (\*\*\*\*) when all criteria are met. For the purposes of this review, both the lead researcher and a second researcher independently assessed the methodological quality of all studies included. Discrepancies were resolved through discussion between the two researchers, and the rest of the authors were consulted when further arbitration was needed. All included studies met at least two of four criteria which resulted in them attaining a MMAT ‘quality score’ of 50% and above. Considering the final and manageable number of studies ( $N = 63$ ) researchers decided not to exclude any of them. However, the researchers interpreted with caution studies with lower quality, placing more emphasis on studies with higher quality. MMAT scores for each study are available upon request from the researchers.

## **2.8. Results**

The results presented below are a narrative synthesis of all included studies. The final sample is made up of 63 studies involving 37,553 working individuals from single studies, added to individuals included in the three meta-analyses. It is worth mentioning that none of the studies included in this systematic review explored all of the five well-being dimensions mentioned above. However, 26 studies explored more than one dimension and their associations when understanding how remote e-working affects working individuals' well-being. There was an international representation of countries where studies were conducted including, but not limited to: U.K., U.S., Australia, and Germany. This review initially discusses studies which draw upon more than one well-being dimension (i.e., affective, cognitive, social, professional, and psychosomatic) supporting a multi-dimensional impact of remote e-working on well-being at work. Subsequently, studies which elaborate on just one well-being dimension are presented. Table 2.3. and Table 2.4. summarise the included studies.<sup>3</sup>

### **2.8.1. Studies Combining Well-being Dimensions**

#### ***2.8.1.1. Affective and social facets of well-being at work***

The affective and social facets of well-being at work have been examined together in ten studies, showing that social support may be detrimental to remote e-workers' affective states. In particular, the extent of working from home increased emotional exhaustion through low social support (Vander Elst et al., 2017). Social support was considered by researchers to be one of the resources that depleted when employees were extensively e-working remotely; something that increased their emotional exhaustion levels

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<sup>3</sup> As some studies looked into a couple of well-being dimensions (and sub-dimensions), the number does not add up to 63, which is the final number of included studies. Table 3 and Table 4 provide detail on the aspects examined by each study.

(Sardeshmukh, Sharma, & Golden, 2012). In contrast, when organisational support was present, individuals felt less socially isolated which, in turn, increased their job satisfaction levels (Bentley et al., 2016). Similarly, developing and maintaining good relationships was found to be extremely important to remote e-workers' job satisfaction levels (Fay & Kline, 2012; Golden & Veiga, 2008; Staples, 2001), and organisational commitment (Golden & Veiga, 2008). Having compatible co-workers, with whom individuals informally communicated, was associated with increased commitment to the organisation regardless of any experience with exclusion messages (Fay & Kline, 2011).

#### ***2.8.1.2. Cognitive and social facets of well-being at work***

Vander Elst et al.'s (2017) was the only study which assessed cognitive along with social facets; highlighting again the importance of social support from colleagues. In particular, the cognitive stress complaints individuals experienced were linked to low social support.

#### ***2.8.1.3. Affective and professional facets of well-being at work***

Ten of the included studies have focused on both the affective and professional characteristics of well-being at work, suggesting that the impact of remote e-working to professional well-being can be bilateral. More explicitly, autonomy was supported to play an eminent role to remote e-workers' job satisfaction levels. For instance, job autonomy was related to a reduction in strain, through less perceived invasion of privacy (Suh & Lee, 2017). Included studies generally suggested that autonomy mediated the positive relationship between remote e-working and job satisfaction (Gajendran & Harrison, 2007; Hornung & Glaser, 2009). Autonomy was also found to be a job resource through which

Table 2.3.

*Studies assessing multiple well-being dimensions.*

Authors	Sample (Demographics and remote e-working definition used <sup>4</sup> )	Type of evidence and Findings	Well-being construct(s)	MMAT score
Suh & Lee, (2017)	South Korea, IT companies (n = 258)  <b>Low intensity teleworkers</b> (n = 154) working less than 2.5 days a week and <b>high intensity teleworkers</b> (n = 104) working more than 2.5 days outside a central work location	Quantitative, cross sectional.  <b>Findings:</b> Technology-induced stressors were linked to increased strain, and strain was associated with teleworkers' job satisfaction. Job autonomy negatively linked to teleworkers' strain, through less perceived invasion of privacy.	Job satisfaction ( <i>Affective</i> )  Job autonomy ( <i>Professional</i> )	100%  (****)
Vander Elst et al. (2017)	Belgium, telecommuting company, (n = 878) <b>Extent of telecommuting:</b> Days per week individuals worked from home (67.9% worked more than a day from home)	Quantitative, cross sectional. <b>Findings:</b> The extent of telecommuting: (a) positively linked to emotional exhaustion through low social support, (b) was associated with increased cognitive stress complaints (such as having problems to concentrate) through low social support, (c) negatively linked to social support, and (d) was not related to job autonomy.	Emotional exhaustion ( <i>Affective</i> ) Cognitive stress complaints ( <i>Cognitive</i> ) Social Support ( <i>Social</i> ) Job autonomy ( <i>Professional</i> )	100% (****)
Bentley et al. (2016)	New Zealand, 28 organisations, (n = 804) <b>Low intensity teleworkers</b> (n = 509) working 1 to 7 hours away from their central office; <b>Hybrid teleworkers</b> (n = 295) working above 8 hours away.	Quantitative, cross sectional.  <b>Findings:</b> Organisational social support and teleworker support positively linked to job satisfaction. Social isolation mediated the relationship between organisational support and job satisfaction.	Job satisfaction ( <i>Affective</i> )  Social Isolation ( <i>Social</i> )	75%  ***

<sup>4</sup>Information and communication technology use is not mentioned in any of the definitions provided, since it was an essential requirement for a study to be included

Authors	Sample (Demographics and remote e-working definition used)	Type of evidence and Findings	Well-being construct(s)	MMAT score
Nijp et al. (2016)	Denmark, financial and insurance company, ( $n = 361$ intervention group; $n = 80$ reference group) <b>New Ways of Working (NWW):</b> working minimum two days from home and two days from the office.	Quantitative, quasi-experimental design. <b>Findings:</b> NWW (a) linked to increased satisfaction with work location but was not related to (b) job satisfaction, (c) satisfaction with work-time control, (d) organisational commitment, (e) social support and (f) autonomy.	Job satisfaction Organisational commitment ( <i>Affective</i> ) Social support ( <i>Social</i> ) Job autonomy ( <i>Professional</i> )	75% ***
Sewell & Taskin, (2015)	Belgium, biopharmaceutical company, ( $n = 31$ ) <b>Home-based teleworkers:</b> working from home one or two days per week.	Qualitative, longitudinal case study (semi-structured interviews, participant observation). <b>Findings:</b> Remote e-workers felt more isolated, 'apart' and invisible, when working from home; where their autonomy and self-determination constrained them. The well-established trusted relationships were strained once the pilot started.	Social Isolation/ Trusting relationships ( <i>Social</i> ) Autonomy/ Control ( <i>Professional</i> )	75% ***
Richardson & McKenna, (2014)	Canada, high-tech industry ( $n = 80$ ) <b>Flexworkers:</b> working from home two or more days per week.	Qualitative, semi-structured in-depth interviews. <b>Findings:</b> remote e-workers worked harder to show their trustworthiness and managers put a greater effort to trust them. Individuals re-ordered and re-spaced boundaries between work and home life (e.g. focused on time management, maintained connections with colleagues, made their achievements public).	Social relationships ( <i>Social</i> ) Skills ( <i>Professional</i> ) Career advancement ( <i>Professional</i> )	75% ***
Gajendran et al. (2014)	US, over 100 industries, ( $n = 323$ ; $n = 120$ telecommuted) <b>Telecommuting:</b> working from remote locations (e.g., home or virtual office)	Quantitative, cross sectional <b>Findings:</b> LMX was positively, but not significantly correlated to remote e-working and its intensity. Perceived autonomy was positively and significantly associated with remote e-working (yes/no) and its intensity.	Leader member exchange (LMX) ( <i>Social</i> ) Perceived Autonomy ( <i>Professional</i> )	75% ***

Authors	Sample (Demographics and remote e-working definition used)	Type of evidence and Findings	Well-being construct(s)	MMAT score
Grant et al. (2013)	U.K., five organisations, ( $n = 11$ ). <b>Remote e-workers:</b> worked in different locations, at any given time using technology to aid flexible working practices	Qualitative study, semi-structured interviews <b>Findings:</b> Building and maintaining relationships was essential for individuals' psychological well-being, with trust being a key component to remote e-working success. The degree of autonomy varied between clerical/ administrative roles and managerial professional employees.	Working Relationships ( <i>Social</i> ) Autonomy ( <i>Professional</i> )	75% ***
Sardeshmukh Sharma, & Golden (2012)	US, supply management company, ( $n = 417$ ). <b>Telework:</b> employees allocating their work time between office and home.	Quantitative, cross sectional. <b>Findings:</b> Remote e-working was (a) negatively associated with exhaustion (b) negatively associated with social support (c) positively associated with autonomy. Remote e-working was also linked to lower exhaustion through job demands (i.e., time pressure, role ambiguity and role conflict) and job resources (i.e., job autonomy, feedback and job support)	Exhaustion ( <i>Affective</i> ) Social support ( <i>Social</i> ) Autonomy ( <i>Professional</i> )	75% ***
Fay & Kline, (2012)	Midwestern US, 12 companies, ( $n = 100$ ). <b>High intensity teleworkers:</b> employees working remotely at least three business days each week.	Quantitative, cross sectional. <b>Findings:</b> Remote e-workers' informal communication and social support accounted for 20% of organisational commitment's variance.	Organisational Commitment ( <i>Affective</i> ) Co-worker relationship quality ( <i>Social</i> )	75% ***
Fay & Kline, (2011)	Midwestern US, 12 companies, ( $n = 100$ ). <b>High intensity teleworkers:</b> employees working remotely at least three business days each week.	Quantitative, cross sectional. <b>Findings:</b> Informal workplace relationships (i.e. co-worker liking) was associated with remote e-workers' organizational commitment and job satisfaction.	Job Satisfaction Organisational Commitment ( <i>Affective</i> ) Co-worker Liking ( <i>Social</i> )	75% ***

Authors	Sample (Demographics and remote e-working definition used)	Type of evidence and Findings	Well-being construct(s)	MMAT score
Morganson et al. (2010)	US, engineering and technology research organisation, ( <i>n</i> = 578). <b>Location</b> employees spent the majority of their work time (i) Main office, (ii) Company-provided satellite location, (iii) Client location, (iv) Home.	Quantitative, quasi-experimental design. <b>Findings:</b> Employees working from home indicated: (a) similar levels of job satisfaction as employees working from the main office (b) and satellite-based workers, and (c) greater levels of job satisfaction compared to client-based workers and (d) the highest degree of inclusion.	Job Satisfaction ( <i>Affective</i> ) Workplace Inclusion (an opposite to professional isolation)( <i>Professional</i> )	75% ***
Ten Brummelhuis et al. (2010)	Netherlands, 30 organisations, ( <i>n</i> = 1017). <b>Telecommuting:</b> employees worked at home at least once a week.	Quantitative, cross sectional. <b>Findings:</b> No relationship was confirmed between remote e-working, and employee collegiality, or supervisory support. After controlling for autonomy, a significant and positive relationship between remote e-working and job autonomy was indicated.	Supervisory Support Collegiality ( <i>Social</i> ) Autonomy ( <i>Professional</i> )	75% ***
Redman, et al. (2009)	U.K., professional employees, ( <i>n</i> = 749) <b>Working from home:</b> Measured in hours.	Quantitative, cross-sectional. <b>Findings:</b> After controlling for total hours worked, working from home was: (a) positively associated with positive affect, (b) positively associated with job satisfaction, (c) negatively associated with emotional exhaustion, (d) negatively associated with perceived career development opportunities, (e) not associated with organizational commitment.	Positive affectivity Job satisfaction Emotional exhaustion Organisational Commitment ( <i>Affective</i> ) Organisational support for career development ( <i>Professional</i> )	75% ***
Hornung& Glaser, (2009)	German, public employees ( <i>n</i> = 1008; 62,6% telecommuters) <b>Telecommuting:</b> work from home between one and four days a week	Quantitative, cross-sectional. <b>Findings:</b> Job satisfaction was positively associated with remote e-working through increased job autonomy.	Job satisfaction ( <i>Affective</i> ) Autonomy ( <i>Professional</i> )	100% (****)



Authors	Sample (Demographics and remote e-working definition used)	Type of evidence and Findings	Well-being construct(s)	MMAT score
O'Neill et al. (2009)	Western Canada, eight organisations, ( $n = 156$ : $n = 78$ teleworkers, $n = 78$ non-teleworkers). <b>Telework:</b> working away from the traditional workplace.	Quantitative, cross sectional. <b>Findings:</b> There was a slightly higher score of satisfaction and greater levels of job autonomy within remote e-workers than non-remote e-workers.	Job Satisfaction ( <i>Affective</i> ) Job autonomy ( <i>Professional</i> )	75% (***)
Golden & Veiga (2008)	US, high-tech industry, ( $n = 375$ ). <b>Virtual work:</b> the proportion of an average workweek employees spent away from the office.	Quantitative, cross sectional. <b>Findings:</b> LMX negatively linked to remote e-working intensity. Remote e-working intensity moderated the LMX-organisational commitment relationship and the LMX-job satisfaction relationship. The better the quality the more committed and satisfied remote e-workers were.	Job Satisfaction Organisational commitment ( <i>Affective</i> ) LMX quality Superior – subordinate relationships ( <i>Social</i> )	75% (***)
Gajendran & Harrison (2007) <sup>5</sup>	46 studies in natural settings, ( $n = 12,883$ ). <b>Telecommuting:</b> work tasks performed in locations other than the central workplace.	Meta-analysis. <b>Findings:</b> Remote e-working positively linked to: a) job satisfaction, b) employee–supervisor relationship, c) autonomy, and was negatively linked to d) perceived career prospects.	Job satisfaction ( <i>Affective</i> ) Autonomy and Career prospects ( <i>Professional</i> ) Quality of supervisor and co-worker relationship ( <i>Social</i> )	
Golden, (2006b)	US telecommunications industry, ( $n = 294$ ). <b>Virtual work:</b> working in a virtual mode, away from the office.	Quantitative, cross sectional. <b>Findings:</b> Whilst satisfaction initially increased, when e-working became more intense, satisfaction dropped, indicating a curvilinear relationship. This was mediated by the LMX relationship, and team member exchange quality.	Job Satisfaction ( <i>Affective</i> ) LMX and team member exchange quality ( <i>Social</i> )	75% (***)

<sup>5</sup> The three meta-analyses received no MMAT scores, as the MMAT tool criteria have only the ability to assess the quality of primary quantitative, qualitative and mixed methods studies.

Authors	Sample (Demographics and remote e-working definition used)	Type of evidence and Findings	Well-being construct(s)	MMAT score
Lapierre, & Allen, (2006)	US, Ontario University alumni, ( $n = 230$ ). <b>Telecommuting:</b> employees working from home.	Quantitative, cross sectional. <b>Findings:</b> Remote e-working was not found to be a conflict avoiding method that influences employees' affective and psychosomatic well-being through work-family conflict.	Emotions ( <i>Affective</i> ) General somatic complaints ( <i>Psychosomatic</i> )	75% (***)
Golden & Veiga, (2005)	US, high-tech firm, ( $n = 321$ ). <b>Telecommuting:</b> number of hours per week employees spent away from an office environment.	Quantitative, cross-sectional. <b>Findings:</b> A curvilinear relationship between remote e-working and job satisfaction was indicated. Remote e-workers with lower levels of task interdependence and/or higher levels of job discretion experienced greater levels of job satisfaction.	Job satisfaction ( <i>Affective</i> ) Job discretion – Autonomy ( <i>Professional</i> )	100% (****)
Mann & Holdsworth, (2003)	U.K., journalism company. 1 <sup>st</sup> study: ( $n = 12$ : $n = 6$ teleworkers, $n = 6$ office-based workers). 2 <sup>nd</sup> study: ( $n = 62$ : $n = 30$ teleworkers, $n = 32$ office-based workers). <b>Teleworkers:</b> working from home at least 3 days a week.	Mixed methods, 1 <sup>st</sup> study: qualitative, semi-structured interviews; 2 <sup>nd</sup> study: quantitative, cross-sectional. <b>Findings:</b> Teleworkers experienced a greater range of negative emotions (e.g., loneliness, irritability and guilt) in comparison to office-based workers. No difference between psychosomatic health of office-based and teleworkers was found.	(1 <sup>st</sup> study) Psychological impact/emotions ( <i>Affective</i> ) (2 <sup>nd</sup> study) Mental ill health ( <i>Affective</i> ) Physical stress symptoms ( <i>Psychosomatic</i> )	75% (***)
Dambrin, (2004)	France, manufacturing electronic company, ( $n = 15$ ) <b>Home-based teleworkers:</b> employees spent at least 75% of their time away from their employer's main premises (home, remote office, travel)	Qualitative, case study (semi-structured interviews and emails, contract, schedules, and observation of one worker). <b>Findings:</b> Communications between employees and managers became harder, but easier between colleagues and customers. Autonomy concerning problem solving and self-management increased.	Manager-employee relationship/ relationship between superior and subordinates ( <i>Social</i> ) Autonomy ( <i>Professional</i> )	75% (***)

Authors	Sample (Demographics and remote e-working definition used)	Type of evidence and Findings	Well-being construct(s)	
Montreuil & Lippel, (2003)	Canada, public and private sectors, (n = 63) <b>Telework:</b> employees working from home (either full time or between 3 or 4 days a week).	Qualitative, interviews. <b>Findings:</b> Remote e-workers' indications of social isolation were rare and not intense. Strategies were implemented to prevent solitude. Remote e-workers reported overall health benefits. However, computer use suggested to be associated with musculoskeletal problems (e.g., pain in their upper limbs, back or neck).	Social Isolation ( <i>Social</i> ) Musculoskeletal symptoms ( <i>Psychosomatic</i> )	50% (**)
Vittersø et al. (2003)	Fourteen European companies (including Norway, U.K., Iceland) 1 <sup>st</sup> study: (n = 217 teleworkers). 2 <sup>nd</sup> study: (n = 42 both home-workers and non-home workers). <b>Home-based telework:</b> working from home.	Mixed methods; 1 <sup>st</sup> study: quantitative, cross sectional; 2 <sup>nd</sup> study: qualitative, in-depth interviews. <b>Findings:</b> A significant relationship between days working from home and concentration or control/ autonomy was not supported. In contrast, narratives suggested that home workers were more likely to concentrate at home and that the greater control over their working situation was one of the greatest motivations to work in this way.	Concentration ( <i>Cognitive</i> ) Control/ Autonomy ( <i>Professional</i> )	75% (***)
Staples, (2001)	US, 18 organisations, (n = 631: 376 remotely managed). <b>Remote workers:</b> employees working in a remote location from their managers (e.g., another company cite, home).	Quantitative, cross-sectional. <b>Findings:</b> No differences between remote e-workers and their colleagues were revealed. For both remote workers and their colleague: a trusting relationship between the manager and employee was linked to greater job satisfaction.	Job Satisfaction ( <i>Affective</i> ) Trusting relationships ( <i>Social</i> )	75% (***)

Table 2.4. Studies assessing a single well-being dimension.

Authors	Sample (Demographics and remote e-working definition used)	Type of evidence and Findings	Well-being construct(s) examined	MMAT score
De Menezes & Kelliher (2017)	United Kingdom, pharmaceutical, utilities, banking, and consulting sectors, ( $n = 1017$ ). <b>Remote working</b> involves discretion over when and where to work, either formally ( $n = 239$ ) or informally ( $n = 778$ ).	Quantitative, cross-sectional. <b>Findings:</b> Job satisfaction and organisational commitment were positively related to remote working.	Job satisfaction Organisational commitment ( <i>Affective</i> )	75% (***)
Kröll et al. (2017)	11 studies examining telecommuting and job satisfaction, ( $n = 6,228$ ). <b>Telecommuting</b> involves discretion over when and where employees conduct their work tasks.	Meta-analysis of real experiment, quasi-experiment and field study designed studies <b>Findings:</b> There was no effect found of telecommuting on job satisfaction.	Job satisfaction ( <i>Affective</i> )	
Windeler et al. (2017)	Study 1: US, IT organisation, ( $n = 51$ employees before and after PPT). Study 2: US, variety of industries, ( $n = 98$ no regular PTT; $n = 160$ minimum one per week). <b>Part-time telework (PTT)</b> working one/two days per week from home.	Quantitative, cross sectional. <b>Findings:</b> PTT: (a) lessened the positive link between interpersonal interaction and work exhaustion, (b) but exacerbated the positive link between external interaction and work exhaustion.	Emotional exhaustion ( <i>Affective</i> )	100% ****
Collins et al. (2016)	U.K., public sector local authority, ( $n = 33$ ; $n = 8$ supervisors/managers; $n = 12$ office-based clerical staff; $n = 13$ clerical teleworkers) <b>Teleworkers/Working from home:</b> working full-time from home.	Qualitative, semi-structure interviews. <b>Findings:</b> Social support by office workers was eventually lessened (social disconnection), as stronger social support networks were developed with other colleagues working from home.	Social support ( <i>Social</i> )	75% (***)

Authors	Sample (Demographics and remote e-working definition used)	Type of evidence and Findings	Well-being construct(s)	MMAT score
Anderson et al. (2015)	US, government agency, ( <i>n</i> = 102). <b>Employees working from home</b> at least once per pay period but also working some days in the office.	Quantitative, cross- sectional. <b>Findings:</b> Remote e-workers expressed more positive and less negative work-related emotions on days working from home, compared to the ones working in the office.	Emotional experience ( <i>Affective</i> )	75% (***)
Chen & McDonald, (2015)	US, Networked Worker Survey 2008 ( <i>n</i> = 703: 17% home workers, 55% onsite workers, 28% mixed workers). <b>Telework:</b> employees working full-time from home.	Quantitative, cross- sectional. <b>Findings:</b> Home workers mentioned higher levels of job decision latitude, compared to onsite workers, through greater network connectivity (social capital).	Job Decision Latitude: (a) Decision autonomy, (b) skill utilisation and development ( <i>Professional</i> )	75% (***)
Vega et al. (2015)	US, government agency, ( <i>n</i> = 180). <b>Telework:</b> working at home or at another location away from the office (e.g., coffee shops).	Quantitative, cross-sectional. <b>Findings:</b> Higher levels of job satisfaction were experienced when working at home compared to working in an office location.	Daily job satisfaction ( <i>Affective</i> )	100% (****)
Troup, & Rose, (2012)	Australia, public service organisation, ( <i>n</i> = 856). <b>Telework:</b> Extent to which employees worked at home in the past 12 months.	Quantitative, cross- sectional. <b>Findings:</b> Both employees who formally and informally worked from home expressed higher degrees of job satisfaction compared to those who did not have access to it.	Job satisfaction ( <i>Affective</i> )	75% (***)
Golden, (2012)	US, computer company, ( <i>n</i> = 316). <b>Teleworking during traditional hours:</b> working from home during typical work hours. <b>Teleworking during non-traditional hours:</b> Working from home during non-typical work hours.	Quantitative, cross-sectional <b>Findings:</b> There was no significant relationship found between work exhaustion and traditional telework; nor non-traditional telework.	Work exhaustion ( <i>Affective</i> )	75% (***)

Authors	Sample (Demographics and remote e-working definition used)	Type of evidence and Findings	Well-being construct(s)	MMAT score
Caillier, (2012)	US, federal government, ( $n = 20,000$ ). <b>Telecommuting/ telework:</b> ability to perform work from home or another remote location.	Quantitative, cross-sectional. <b>Findings:</b> Employees who were not allowed to e-work reported lower levels of work motivation (i.e., job satisfaction and organization commitment), in comparison to both frequent and infrequent remote e-workers.	Job satisfaction Organisational commitment ( <i>Affective</i> )	75% (***)
Harker et al. (2012)	19 studies, 32 correlations from empirical studies. <b>Telecommuting/ telework:</b> working, for at least one day per week from any other location than the main office (e.g., home, satellite offices).	Quantitative, meta-analysis. <b>Findings:</b> Meta-analytical data indicated a positive association between remote e-working and organisational commitment.	Organisational commitment ( <i>Affective</i> )	
Galvez et al. (2011)	Spain, 20 organisations, ( $n = 72$ , *solely females). <b>Teleworking:</b> employees working from home.	Qualitative, interviews ( $n = 24$ ) and focus groups ( $n = 48$ ) <b>Findings:</b> In organisations where balance was encouraged women's autonomy (about time, manner & location) and promotion were benefited by remote e-working; in contrast to organisations with none-balance supportive culture.	Autonomy Career advancement ( <i>Professional</i> )	75% (***)
Mulki& Jaramillo (2011)	US, subsidiary of a pharmaceutical company ( $n = 344$ ). <b>Virtual workers:</b> employees do not work in a traditional office setting and have few FTF meetings with their colleagues or supervisors.	Quantitative, cross sectional. <b>Findings:</b> The frequency of face-to-face meetings was not significantly associated with workplace isolation. Support by the leaders was associated with lower turnover intentions through workplace isolation and satisfaction with supervisor.	Workplace isolation (company-related or colleagues- related) Satisfaction with supervisor ( <i>Social</i> )	100% (****)

Authors	Sample (Demographics and remote e-working definition used)	Type of evidence and Findings	Well-being construct(s)	MMAT scores
Tietze & Nadin (2011)	U.K., local authority, $n = 7$ , all women). <b>Home-based workers:</b> full time working from home.	Qualitative, longitudinal case design (assessing a four-month pilot home-working initiative: before, during and after) <b>Findings:</b> Contact between colleagues became difficult as office-based colleagues showed resentment towards individuals working from home. Managers showed low trust to home-based individuals by highly monitoring them.	Relationships between employees and their employer, and colleagues. Social Isolation( <i>Social</i> )	75% (***)
Hayman, J. (2010)	Australia, administrative and professional university staff, ( $n = 125$ ). <b>Flexi-place work schedules:</b> Employees worked from a home office at least two days per week.	Quantitative, cross- sectional <b>Findings:</b> A positive and moderate association between flexi-place work schedules and job satisfaction was found.	Job satisfaction ( <i>Affective</i> )	75% (***)
Fonner, & Roloff, (2010)	US, different sectors and occupations, ( $n = 192$ : $n = 103$ office-based*, $n = 89$ telecommuters). <b>Telecommuters:</b> working at least 3 days a week from a remote location.	Quantitative, cross-sectional <b>Findings:</b> A direct and significant effect between remote e-working and job satisfaction was supported.	Job satisfaction ( <i>Affective</i> )	100% (****)
Kelliher, & Anderson, (2010)	U.K., three multinational private sector organisations. 1 <sup>st</sup> study: ( $n = 14$ remote workers); 2 <sup>nd</sup> study: ( $n = 729$ remote workers, $n = 1109$ non-remote workers) <b>Remote working:</b> working from home partly in the week.	Mixed methods, 1 <sup>st</sup> study: qualitative, semi structured interviews; 2 <sup>nd</sup> study: quantitative, cross- sectional. <b>Findings:</b> Remote e-workers were suggested to be more satisfied with their jobs and committed to the organisations they worked for when e-working. Remote e-workers were more satisfied than their colleagues.	Job satisfaction Organisational commitment ( <i>Affective</i> )	75% (***)

Authors	Sample (Demographics and remote e-working definition used)	Type of evidence and Findings	Well-being construct(s)	MMAT score
Virick et al. (2010)	US, telecommunications organisation, ( $n = 85$ ). <b>Virtual work arrangement / Telecommuting:</b> employees working from home.	Quantitative, cross-sectional. <b>Findings:</b> A curvilinear relationship between the extent of remote e-working and job satisfaction was supported: after a number of days per week an individual e-works, the benefits to job satisfaction started dropping.	Job satisfaction ( <i>Affective</i> )	100% (****)
Lal & Dwivedi (2009)	U.K., telecommunications company, ( $n = 25$ ). <b>Homeworking:</b> employees worked from two to five days a week from home <i>*the majority worked for most of their time from home.</i>	Qualitative, in-depth, semi-structured interviews. <b>Findings:</b> Employees working extensively from home took proactive steps to decrease social isolation (by using phone devices). Relationship did not deteriorate as employees maintained social networks and had close colleagues.	Social isolation Social relationships ( <i>Social</i> )	75% (***)
Golden et al. (2008)	US, high-tech corporation, ( $n = 261$ ). <b>Telework:</b> employees performing work assignments remotely, away from the office.	Quantitative, cross sectional. <b>Findings:</b> Although remote e-workers reported a quite high average level of professional isolation there was no significant correlation between professional isolation and time spent e-working.	Professional Isolation ( <i>Professional</i> )	75% (***)
Marsh & Musson, (2008)	U.K., ( $n = 3$ ). <b>Home-based teleworkers:</b> worked from home for between half and all of their working week.	Qualitative, semi-structured interviews <b>Findings:</b> Remote e-working offered men the opportunity to deal with emotional discourses traditionally associated with women. This could, in turn, liberate them and enable them to become more emotionally engaged in their parental role.	Emotions ( <i>Affective</i> )	75% (***)
McDonald et al. (2008)	Australia, government agency, ( $n = 40$ ) <b>Telecommuting/teleworking</b> working some or all the time from home.	Qualitative, semi-structured interviews <b>Findings:</b> Remote e-working was perceived as a type of workplace absence, which was inconsistent with the requirement to be visible in order to get access to career opportunities.	Career success/ career opportunities ( <i>Professional</i> )	75% (***)



Authors	Sample (Demographics and remote e-working definition used)	Type of evidence and Findings	Well-being construct(s)	MMAT score
Hartig et al. (2007)	Sweden, national energy administration, ( $n = 101$ : $n = 58$ teleworkers, $n = 43$ non-teleworkers) <b>Teleworkers:</b> working at least eight or more hours of an ordinary work week (not overtime) at home.	Quantitative, cross sectional. <b>Findings:</b> Both remote and non-remote e-workers experienced home more of a place of restoration than demands and reported similarly effective restoration.	Home as a place of restoration or as a place of demands/ Effective restoration outside work ( <i>Cognitive</i> )	75% (***)
Taskin& Edwards, (2007)	Belgium, public agencies, ( $n = 36$ ). <b>Home-based paid telework:</b> work conducted from home at least one day per week.	Qualitative, two case studies, semi-structured interviews. <b>Findings:</b> Not the public sector itself, but employees' occupational status affected the control and discretion remote e-workers had. Remote e-working may benefit more knowledge employees, who are already autonomous. In organisations with bureaucratic structure, control may intense to ensure that employees are present.	Control – Autonomy ( <i>Professional</i> )	75% (***)
Baker et al. (2006)	20 Australian, both public and private organisations, ( $n = 50$ ). <b>Working from home</b> for their organisation (for a range of hours).	Quantitative, cross-sectional. <b>Findings:</b> High scores of job satisfaction were indicated. Also organisational constructs (e.g. technical support, managers' trust) and job related factors (e.g. feedback from the jobs) were positively related to employees' satisfaction.	Job satisfaction ( <i>Affective</i> )	75% (***)
Golden (2006a)	US, internet solution corporation, ( $n = 393$ ). <b>Telework:</b> the amount of time employees spent working away from the office (no exact location provided)	Quantitative, cross-sectional <b>Findings:</b> Remote e-working was (a) significantly and positively associated with a greater degree of organisational commitment and (b) negatively linked to work exhaustion.	Organisational commitment Work exhaustion ( <i>Affective</i> )	75% (***)

Authors	Sample (Demographics and remote e-working definition used)	Type of evidence and Findings	Well-being construct(s)	MMAT score
Kossek et al. (2006)	US, information and finance organisations, ( $n = 245$ ). Formal users of the <b>telework policy</b> : working from home.	Quantitative, cross sectional <b>Findings:</b> Psychological job control was positively correlated with both formal telework policy user and telework volume.	Psychological job control (over how, when and where job is done) ( <i>Professional</i> )	75% (***)
Akkirman & Harris, (2005)	Turkey, subsidiary of an international company, ( $n = 68$ : $n = 46$ virtual, $n = 22$ traditional office workers). <b>Virtual office workers:</b> worked from the office whenever they wanted	Quantitative, cross sectional. <b>Findings:</b> Virtual workers indicated higher level of satisfaction with their relationship with their supervisor than the traditional office workers.	Relationship with supervisor ( <i>Social</i> )	75% (***)
Dimitrova, (2003)	Canada, telecommunications company, ( $n = 20$ ). <b>Teleworkers:</b> Employees working full time from home.	Qualitative, case study (semi-structured interviews). <b>Findings:</b> Limited beneficial influence of remote e-working on autonomy, as supervisory procedures had not changed. Increased discretion of temporal management of work was found, which led to longer working hours.	Autonomy ( <i>Professional</i> )	75% (***)
Konradt et al. (2003)	Germany, 19 companies, ( $n = 72$ ). <b>Home-centred teleworkers:</b> worked more than 50% of their working hours from home. <b>Office-centred teleworkers:</b> worked more than 50% of their working hours from office.	Quantitative, cross-sectional. <b>Findings:</b> No general differences between the teleworkers and the control group as per the job satisfaction. The quality of management by objectives was the strongest predictor of job satisfaction.	Job Satisfaction ( <i>Affective</i> )	100% (****)

Authors	Sample (Demographics and remote e-working definition used)	Type of evidence and Findings	Well-being construct(s)	MMAT score
Raghuram et al. 2003	US, telecommunications company ( $n = 723$ ). <b>Telecommuters</b> worked from home.	Quantitative, cross sectional. Telecommuters scored higher on self-efficacy and structuring behaviour skills. Individuals' self-efficacy was related to their structuring behaviour skills, whereas their experience with remote e-working was not. The more self-efficacious individuals were, the easier they found it to adjust to remote e-working.	Self-efficacy Structuring behaviour (skills) ( <i>Professional</i> )	75% (***)
Cooper & Kurland, (2002)	US, private and public sectors ( $n = 92$ : $n = 30$ supervisors, $n = 37$ telecommuters, $n = 25$ non-telecommuters) <b>Telecommuting</b> : working outside an office environment (mainly home).	Qualitative, semi-structured interviews. <b>Findings</b> : Remote e-workers from both private and public sector expressed feelings of professional isolation.	Professional Isolation ( <i>Professional</i> )	75% (***)
Bélanger et al (2001)	US, six IS organisations, ( $n = 110$ : $n = 67$ telecommuters, $n = 43$ non-telecommuters) <b>Telecommuting</b> : working at least one day away from the main office.	Quantitative, cross sectional. <b>Findings</b> : Higher levels of available communication technology were associated with greater levels of remote e-workers' satisfaction.	Job Satisfaction ( <i>Affective</i> )	75% (***)
Ilozor, Ilozor and Carr, (2001)	Australia, IBM, ( $n = 43$ ). <b>Telecommuters</b> : exact definition not provided.	Quantitative, cross sectional. <b>Findings</b> : Specific management communication strategies (e.g. clarity and regularity of communication) were positively associated with remote e-workers' job satisfaction.	Job Satisfaction ( <i>Affective</i> )	50% (**)

Authors	Sample (Demographics and remote e-working definition used)	Type of evidence and Findings	Well-being construct(s)	MMAT score
Baruch (2000)	U.K., five organisations, ( $n = 62$ ). <b>Teleworkers:</b> working from their home (between two days a week to a full-time basis).	Qualitative, semi-structured interviews Remote e-working had a negative impact on career aspiration and future career perceptions. Individuals mentioned that there were some very important qualities to effectively work from home, such as being self-disciplined, self-motivated, able to work on own, being tenacious, and well-organised. On the contrary, high need for social life, and a need to be supervised showed unfit for remote e-working.	Career development, future career perceptions, Qualities/ Competencies/ Skills ( <i>Professional</i> )	75% (***)
Mann et al. (2000)	U.K., telecommunications, ( $n = 14$ ). <b>Teleworkers:</b> worked mainly from home, although most did go into the office at times (for meetings).	Qualitative, semi-structured interviews. <b>Findings:</b> A minor positive emotional impact of remote e-working on affective well-being (e.g. less travel-related stress) and a major negative impact (e.g. loneliness, frustration) were found.	Psychological implications /Emotional experience ( <i>Affective</i> )	50% (**)
Igbaria & Guimaraes (1999)	US, sales company, ( $n = 225$ : $n = 104$ telecommuters; $n = 121$ non-telecommuters) <b>Telecommuters:</b> working mostly at home or on the road, go into the office at times (for meetings).	Quantitative, cross sectional. <b>Findings:</b> E-workers showed greater levels of overall satisfaction, but similar levels of organisational commitment. They were more satisfied with work and supervisions, and less satisfied with co-workers and promotion.	Job Satisfaction Organisational commitment ( <i>Affective</i> )	75% (***)

emotional exhaustion could lessen (Sardeshmukh et al., 2012). Whereas autonomy may ameliorate feelings of emotional exhaustion (Sardeshmukh et al., 2012), time spent away from the office can harm one's perceptions about career opportunities and how much the organisation invests in training and development of employees (Redman, Snape, & Ashurst, 2009).

#### ***2.8.1.4. Professional and social facets of well-being at work***

Ten studies examined professional and social aspects of well-being together. Initially, qualitative studies investigated how autonomy is re-defined in remote e-working populations because of changes in supervisory control and dynamics. Findings revealed that despite already trusted employee-supervisor relationships, individuals still noticed increased supervision from their line manager (Sewell & Taskin, 2015). These findings stress how physical absence from the central office can create trust issues and an increase in control imposed upon employees. It is, thus, not surprising that developing and maintaining relationships was found to be a crucial skill for these employees' career advancement (Richardson & McKenna, 2014). A slightly different picture was presented by some studies suggesting that autonomy was indeed increased but social relationships were challenged (Sardeshmukh et al., 2012) with communication between colleagues and managers becoming more difficult (Dambrin, 2004). On another note, Ten Brummelhuis, Haar, and Van der Lippe (2010) found that working away from the office was associated to greater autonomy; and autonomy was associated with more collegial behaviours. It was then suggested that remote e-workers can counterbalance the decreased interaction with greater communication and collegial behaviours the days that they are present at work.

#### ***2.8.1.5. Psychosomatic and affective facets of well-being at work***

Research focusing on remote e-workers' emotional experience alongside psychosomatic health was assessed in two studies. Remote e-workers' narratives revealed that remote e-

workers experienced more negative emotions compared to their office-based colleagues (Mann & Holdsworth, 2003). Furthermore, the reduced feelings of work-life conflict were not associated with their affective well-being. Additionally, no links were supported between remote e-working and individuals' psychosomatic symptoms (Mann & Holdsworth, 2003; Lapierre & Allen, 2006). However, it is worth mentioning that both studies are somewhat outdated and have solely assessed negative emotions, suggesting that more research is warranted.

#### ***2.8.1.6. Professional and cognitive facets of well-being at work***

Only one mixed methods study examined both autonomy and concentration levels within remote e-working populations (Vittersø et al. 2003). According to the quantitative findings, working from home was not associated with autonomy or greater concentration. This contradicted the qualitative findings, which suggested that work conducted at home enabled individuals to concentrate more, providing them a sense of freedom in their working practices. Also, Vander Elst et al. (2017) suggested that while remote e-working was not related to autonomy, it led to greater cognitive stress complaints (e.g. difficulty concentrating on specific tasks).

#### ***2.8.1.7. Psychosomatic and social facets of well-being at work***

From the included studies, just one looked into both psychosomatic and social aspects of well-being at work. In particular, qualitative narratives of Canadian remote e-workers suggested that individuals rarely felt socially isolated, and that they had strategies in place to ameliorate these feelings (Montreuil & Lippel, 2003). This is common in modern organisations where employees are required to socialise and interact with colleagues both in person and electronically (Beauregard, Basile, & Canonico, 2013). Whereas feelings of social isolation seemed to be lessened, individuals mentioned musculoskeletal problems, such as backache, linked to computer use (Montreuil & Lippel, 2003). This

finding highlights the importance of and need for ergonomically sound equipment and furniture when working from home.

### **2.8.2. Studies Expanding on One out of the Five Proposed Well-being Dimensions**

As mentioned above, the majority of the studies included ( $N = 34$ ) in this systematic review focused on solely one well-being dimension. Their contribution to our understanding around remote e-working and well-being at work is still considered to be fundamental and thus presented in the following section (see Table 2.4.).

#### ***2.8.2.1. Affective well-being dimension***

##### ***2.8.2.1.1. Emotions.***

As already mentioned, the affective dimension attracted the highest number of papers. To begin with, initial qualitative research supported that remote e-working had a negative impact on emotions (Mann, Varey, & Button, 2000). An alternative interpretation of emotions, based on narratives of three fathers, was that working from home could “provide a space where men can adopt the emotional discourses traditionally associated with women” (Marsh & Musson, 2008, p. 46). Whereas fathers prioritised different roles when working from home, they all became more emotionally engaged in parenthood. Nevertheless, recent quantitative findings indicated a more positive relationship. Employing a within-subject design, Anderson, Kaplan and Vega (2015) suggested that, during the days working from home, individuals expressed higher degrees of positive emotions and lower degrees of negative emotions. This was in line with Redman et al.’s (2009) finding that the more employees worked from home, the higher degrees of positive affect-they experienced. The fact that more recent results (i.e., Anderson et al., 2015) support a link between remote e-working and positive emotions could perhaps link to an improvement in technology which enables employees to be more connected to their

workplace than previously (e.g., Lal & Dwivedi, 2009). This may, in turn, decrease frustration linked to inability to reach colleagues (Mann & Holdsworth, 2003).

#### *2.8.2.1.2. Emotional Exhaustion.*

Studies included in this review discussed the relationship between remote e-working and emotional exhaustion by solely drawing upon quantitative findings. Altogether, it was indicated that remote e-working may decrease how emotionally exhausted individuals feel (Golden, 2006a; Redman et al., 2009). Drawing upon the Conservation of Resources theory (Hobfoll, 1989), Golden (2006a) suggested that remote e-workers are enabled to stockpile their resources by avoiding commuting, being flexible to respond to family needs and reducing emotional drain coming from traditional day-to-day work activities. This consequently reduces their emotional depletion.

#### *2.8.2.1.3. Job satisfaction.*

Moreover, job satisfaction has been the most studied construct within remote e-workers, with retrieved studies discussing a mainly positive influence of remote e-working. Meta-analytical findings provided strong evidence for a positive association between remote e-working and job satisfaction (Gajendran & Harrison, 2007). This was supported by the majority of the included studies (e.g., Kelliher & Anderson, 2010; Hornung & Glaser, 2009; Vega, Anderson, & Kaplan 2015). An interesting viewpoint was that the positive link between remote e-working and job satisfaction occurs under specific conditions; indicating a curvilinear relationship (i.e., Caillier, 2012; Golden & Veiga, 2005; Virick, DaSilva, & Arrington, 2010). Golden and Veiga (2005) particularly found that job satisfaction was greater with an increase of remote e-working, but at about 15 hours it decreased and plateaued. It can, thus, be suggested that remote e-working is more beneficial when it takes place as a part-time flexible work arrangement, where face-to-face interactions are maintained and the flexibility is still provided (Caillier, 2012). These



findings challenge previous research suggesting that the more extensively employees are e-working, the greater job satisfaction they experience (Pinsonneault & Boisvert, 2001).

#### *2.8.2.1.4. Organisational Commitment.*

Concerning the last element of the affective well-being dimension, included studies illustrated a mostly positive relationship between remote e-working and organisational commitment. As indicated in Kelliher and Anderson's (2010) interviews, individuals valued the fact that their organisation was accommodating their needs, allowing them to work more flexibly. Although work intensified due to remote e-working, individuals were still more committed to their organisation than their office-based counterparts (Kelliher & Anderson, 2010). Individuals may become more loyal as they appreciate the fact that their organisations trust them to work remotely (Igbaria & Guimaraes, 1999). Meta-analytical findings have confirmed this positive relationship (Harker, Martin & MacDonnell, 2012).

#### *2.8.2.1.5. Moderating, mediating and other related factors in the relationship between affective well-being and remote e-working.*

Personality traits play an important role in what kind of emotions individuals can experience (i.e., Anderson et al., 2015), suggesting that not all individuals would benefit in the same degree from remote e-working. Also, individuals' home situation was found to influence feelings of emotional exhaustion, as those who extensively e-worked remotely and experienced high work-family conflict (WFC) were the most emotionally exhausted (Golden, 2012). This finding is of high importance to individuals who experience a negative blurring of home and work boundaries (Golden, 2012) as they are likely to have less detachment from work and increased negative emotions and fatigue (Sonnentag, Binnewies, & Mojza, 2008).

Moreover, the positive relationship between remote e-working and job satisfaction was found to be moderated by low task interdependence and/or high levels of job discretion (Golden & Veiga, 2005); as well as performance-outcome orientation and workaholic levels (i.e., high drive and low enjoyment; Virick et al., 2010). Furthermore, remote e-workers' satisfaction resulted from greater autonomy (Gajendran & Harrison, 2007; Hornung & Glaser, 2009); greater work-life balance or reduced work-life/family conflict (Fonner & Roloff, 2010; Gajendran & Harrison, 2007; Golden, 2006b), and better relationships with supervisors and colleagues (Fay & Kline, 2012; Golden, 2006b; Staples, 2001). Being able to 'filter out' office-based distractions and disconnect deliberately was positively associated with satisfaction (Fonner & Roloff, 2010). Setting clearer goals, getting more feedback, and providing a higher degree of participation (Konradt, Hertel, & Schmook, 2003), as well as having appropriate equipment (Ilozor, Ilozor, & Carr, 2001), and available ICTs (Bélanger, Collins, & Cheney 2001) was associated with greater job satisfaction. Remote e-working arrangements were found to be more beneficial to women's levels of job satisfaction compared to men's (Troup & Rose, 2012). This aligns with research suggesting that women are more satisfied when e-working, as they can dedicate more time to their family responsibilities (Caillier, 2012).

#### ***2.8.2.2. Cognitive well-being dimension***

The cognitive well-being dimension received the least attention from all the other dimensions. An earlier study by Hartig, Kylin and Johansson (2007) indicated that both remote and office-based workers considered home to be more as a place of restoration, than a place of demands.

*2.8.2.2.1. Moderating, mediating and other related factors in the relationship between cognitive well-being and remote e-working.*

A significant interaction between gender and work arrangement showed that women who were e-working remotely experienced less effective restoration than those who did not (Hartig et al. 2007). This may imply that remote e-working reinforces gendered patterns, as women may have a greater ability to be more involved in the domestic life when working from home (Michelson, 2000). Conclusions should be drawn with caution though, due to Hartig et al.'s (2007) small sample, which makes the results less powerful.

***2.8.2.3. Social well-being dimension***

*Social relationships (with both colleagues and supervisors).*

Researchers explored whether working relationships change when employees are e-working remotely. One of the main concerns raised was the social isolation that individuals may experience. Qualitative findings have suggested that remote e-workers occasionally missed the spontaneous socialisation occurring in an office environment (Tietze & Nadin, 2011). This finding is in line with Sewell and Taskin's (2015) proposition that the decreased regular face-to-face interaction and social proximity between colleagues and supervisors led individuals to feel that "out of sight really was out of mind" (p. 1518).

Within a hostile environment, employees working from home narrated how their office-based colleagues resented communicating with them and their supervisors trusted them less as they could not see them in the main office (Tietze & Nadin, 2011). Additional qualitative findings suggested that the dynamics of the relationships may actually change as remote e-workers created stronger bonds with people working in a similar way, and simultaneously disconnected themselves from office-based colleagues (Collins, Hislop, & Cartwright, 2016). Alternatively, Gajendran and Harrison's (2007) meta-analytic

findings contradicted their expectations, indicating a positive association between the employee-supervisor relationship and remote e-working. The cross-sectional nature of the studies included in this meta-analysis, prohibits us from determining whether remote e-working benefits working relationships, or whether supervisors offer remote e-working to employees who are already performing well, or who they know better (Gajendran & Harrison, 2007). Also, it is worth mentioning that in a supportive organisation where essential training to transition to a virtual way of working took place, remote e-workers were more satisfied with their relationship with their supervisor than their counterparts (Akkirman & Harris, 2005).

#### *2.8.2.3.1. Moderating, mediating and other related factors in the relationship between social well-being and remote e-working.*

Initially, at an individual level, remote e-workers can take the initiative to decrease social isolation or counterbalance its negative consequences by effectively using ICTs (e.g., mobile phones) to stay connected with colleagues (Lal & Dwivedi, 2009; Sewell & Taskin, 2015). This strategy carries the risk though, that individuals may get caught into a negative loop of always being visible to their workplace to avoid judgements of not being physically present (Sewell & Taskin, 2015). Moreover, individuals can work both from home and office when possible, to establish a network of remote e-workers with whom they can discuss and provide mutual assistance (Montreuil & Lippel, 2003), and develop a network of friends outside of work (Tietze & Nadin, 2011). It was also suggested that some individuals are more intrinsically suited to deal with feelings of social isolation (Beauregard et al., 2013); since self-efficacious individuals were less likely to experience isolation from their working environment (Mulki & Jaramillo, 2011). Moreover, the frequency of remote e-working acted as a moderator to the association between remote e-working and working relationships (Gajendran & Harrison, 2007).

Specifically, spending more than 2.5 days per week working away from the office was associated with deterioration in the quality of co-worker relationships. Additionally, demographics were found to link to relationships as remote e-workers who were older and had more tenure with their organisation claimed to have the best established relationships (Akkirman & Harris, 2005; Gajendran & Harrison, 2007). At an organisational level, managers were found to play an important role to support individuals' social isolation feelings. The more supervisors supported and considered employees' efforts (Mulki & Jaramillo, 2011), the less workplace isolation individuals experienced. Also, Montreuil and Lippel (2003) suggested that working with clients, which increased connectedness feelings, as well as getting used to this way of working decreased social isolation feelings.

#### ***2.8.2.4. Professional well-being dimension***

##### ***2.8.2.4.1. Autonomy.***

The qualitative studies, included in this review, provide a pessimistic picture about the autonomy levels of remote e-workers. Dimitrova (2003) claims that although remote e-workers have more autonomy around their temporal scheduling, work becomes intensified and the hours longer. This led to the suggestion that autonomy comes with a cost, which is the collapse of the boundaries between work and non-work spheres. The challenge is to identify whether individuals blur the boundaries and overwork willingly, as a reciprocation of working more flexibly (Kelliher & Anderson, 2010), or whether this is inevitable as ICT use imposes pressure on them to be constantly accessible and responsive (Matusik & Mickel, 2011). Previous research on knowledge workers, who extensively use ICTs for work purposes, encounter the autonomy paradox (Mazmanian, Orlikowski, & Yates, 2013; Putnam, Myers, & Gailliard, 2014; Ter Hoeven & Van Zoonen, 2015). This paradox posits that whilst employees have greater autonomy due to

ICT means available, they simultaneously feel compelled to respond to work matters outside normal working hours. A different picture is provided by the majority of the quantitative evidence, suggesting that autonomy increases within remote e-working populations (Gajendran & Harrison, 2007). Also, even when controlling for individuals' degree of freedom (considering decision-making and how work is structured), Gajendran, Harrison and Delaney Klinger (2014) still suggested higher levels of perceived autonomy among remote e-workers.

#### *2.8.2.4.2. Competence (Knowledge, Skills and Abilities).*

Literature also identified the essential competencies that remote e-workers need to work effectively. Individuals' narrations suggested that some of the most important skills were: self-discipline, self-motivation, ability to work on own, and good time management (Baruch, 2000; Richardson & McKenna, 2014). In contrast, individuals with a high need for supervision and socialisation were found to be unfit for remote e-working. Self-efficacious remote e-workers were found to have better structuring behaviours, adjusting easily to changes in their work brought by remote e-working (Raghuram, Wiesenfeld, & Garud, 2003). Evaluating the evidence, researchers have still not established and quantitatively assessed a list of the essential competencies that are required to be an effective remote e-worker.

#### *2.8.2.4.3. Professional Isolation.*

Three studies included discussed professional isolation as a main concern within remote e-workers. Qualitative narratives of remote e-workers, from both private and public sectors, expressed greater feelings of professional isolation compared to their counterparts (Cooper & Kurland, 2002). It was particularly mentioned that, not being constantly in an office environment was negatively associated with developmental activities, making employees feel professionally isolated. Individuals predominantly

missed the interpersonal networking with other co-workers, the informal learning which develops work-related skills and information sharing and the mentoring from colleagues and supervisors. Quantitative evidence, likewise, suggests that employees working mainly from the office experienced the highest degree of inclusion in their departments, compared to employees working mainly from a home, a satellite, or a client-based office (Morganson et al. 2010). Included studies suggested that organisations and managers need to monitor feelings of professional isolation within remote e-workers, as this may be detrimental to their job satisfaction (Morganson et al. 2010) and performance (Golden et al. 2008).

#### *2.8.2.4.4. Career prospects.*

The studies included in the current review discussed both neutral and negative links between remote e-working and career prospects. Remote e-working was suggested to be an analogue of workplace absence (McDonald, Bradley, & Brown, 2008). This absence was not in line with the visibility required to show dedication and commitment to the organisation and consequently impaired employees' perceptions about their career opportunities. Employees may feel their career is threatened as the organisation does not support their progression by investing in their training and development (McDonald et al. 2008; Redman et al. 2009). This was challenged by a study conducted by McCloskey and Igbaria (2003) where supervisors' appraisals suggested that all employees had the same amount of opportunities for career advancement. These findings should be interpreted with caution though, as they do not portray individuals' perceptions but their supervisors' instead. Likewise, Gajendran and Harrison's (2007) meta-analysis did not support any negative links between remote e-working and perceived career prospects. This was attributed to samples consisting of mostly women, who are more likely to benefit from increased control over their personal and working lives.

#### *2.8.2.4.5. Moderating, mediating and other related factors in the relationship between professional well-being and remote e-working.*

Organisational culture may impact on the degree to which remote e-working influences professional well-being. For instance, organisations which show more understanding of the importance of balancing work and live spheres may make it easier for the individuals to get promoted and feel autonomous (Gálvez, Martinez, & Perez, 2011; Taskin & Edwards, 2007). Organisations' readiness to use remote e-working arrangements was also found to be important as trusting relationships can be challenged, leading organisations to greater micromanagement of employees who work away (Sewell & Taskin, 2015). Lastly, qualitative findings suggested that although remote e-working benefited knowledge workers at the higher levels of the hierarchy, who already possess autonomy in their roles, it did not benefit the rest of the employees (Dimitrova, 2003; Grant et al., 2013; Taskin & Edwards, 2007).

#### **2.8.2.5. Psychosomatic well-being dimension**

With regards this final well-being dimension, no further evidence was presented except from that which was described earlier, suggesting a lack of research conducted on this aspect.

### **2.9. Discussion**

The influence of new forms of work, and particularly remote e-working, on knowledge workers' well-being has been extensively discussed and debated, with research providing both positive and negative viewpoints. The current review supports Allen et al.'s (2015) findings, according to which remote e-working is associated with many different spheres of individuals' working lives (e.g., job satisfaction, relationships, and career). Drawing upon Van Horn et al.'s (2004) model, some strong evidence for a positive relationship between remote e-working and well-being at work is provided. More explicitly, remote



e-working was found to associate with individuals' positive emotions, to increase their job satisfaction and organisational commitment levels, and to ameliorate feelings of emotional exhaustion. Additionally, when it comes to professional well-being, remote e-workers were found to be more autonomous as a result of this working arrangement. Some nuanced findings were presented in relation to social relationships within a remote e-working population. For example, although social isolation has been repeatedly identified as one the main drawbacks of remote e-working (Bailey & Kurland, 2002), this review suggests that individuals can be proactive in mitigating these feelings. Also, considering that individuals are not physically located next to each other, it is not surprising that relationships were found to change. This review goes beyond acknowledging this change, highlighting the pivotal role those relationships, and social support in particular can play for remote e-working to succeed. Nevertheless, some pitfalls are acknowledged. For example, professional isolation and perceived threats in career advancement seem to challenge employees who worry about the opportunities available to them. Moreover, this review discusses some of the mechanisms that seem to underline the complicated relationship between remote e-working and well-being at work expanding on individual (e.g., personality traits), work-related (e.g., job role), and organisational aspects (e.g., organisational culture).

The striking conclusion of this review is that information about important dimensions and sub-dimensions of remote e-workers' well-being is absent. In particular, research has not satisfactorily explored remote e-workers' job aspirations, cognitive weariness, and psychosomatic health. Although, this review elaborated on findings about career prospects and perceptions of professional isolation as an analogue of job aspiration, further evidence is needed to better understand how remote e-workers' perceive their career development. Furthermore, researchers have attempted to respond to the critical

question: Does being away from a traditional office involve specific competencies (i.e., knowledge, skills, and abilities) to be an effective worker? However, additional research is fundamental to establish and quantitatively assess a list of competencies that are required to effectively e-work remotely. This will then fulfil the growing need to shift our attention from virtual work at a group-level and firm-level, and focus on an individual-level instead (Wang & Haggerty, 2011).

There is an increased need to investigate whether remote e-workers experience cognitive weariness, reflected in reduced concentration and impaired switching-off from work. Online debates within a variety of employees revealed that working in solitude and avoiding office interruptions, benefits tasks that require high concentration (Boell et al., 2016). Conversely, empirical evidence suggested that remote e-workers' routine is heavily dependent upon ICTs, dealing with a lot of interruptions such as incoming emails and instant messages (Leonardi et al., 2010). Using multiple communication channels was found to impair concentration (Braukmann et al., 2018). Therefore, this review denotes the need for further research to examine remote e-workers' concentration. Additionally, developed social norms in modern organisations encourage an always on culture (Derks et al., 2015), which especially influences remote e-workers who feel pressurised to be constantly available (Suh & Lee, 2017). Remote e-workers could be considered as susceptible to this 'always-on culture', due to a great blurring of personal and work boundaries (e.g., Tietze & Musson, 2005). This blurring of boundaries and the available technology may enhance the temptation to continue working resulting in a lack of recuperation (Grant et al., 2013). In a very recent review by Schlachter, McDowall, Cropley, and Inceoglu (2017) it was claimed that individuals who use ICTs for work matters, during non-working hours, may fail to mentally detach and switch-off from work (e.g., Middleton, 2007). Hence, further research needs to address whether remote e-

working and the extensive use of ICTs may make it harder for individuals to switch-off from work.

Furthermore, there has also been scarce research concerning the link between remote e-working and individuals' psychosomatic conditions, specifically to musculoskeletal or somatic complaints. The suggestion made by this review are in line with Eurofound and the International Office's (2017) report, according to which we lack knowledge at a European national level about whether remote e-workers are working in ergonomically sound environments when conducting work outside the traditional office. This report particularly raised concerns about the use of mobile ICT devices when remotely e-working and how they influence ergonomics of work. Although remote e-workers may be exposed to the same ergonomic risks as their office-based colleagues, organisations are often not paying sufficient attention to remote or home offices (Ellison, 2012). Ergonomically designed working environments and guidance to work in a safe manner are essential in order to avoid physical complaints and irritations (Garza, Catalano, Katz, Huysmans, & Dennerlein, 2012). Assessing whether remote e-workers change their health-related behaviours (such as eating habits, exercise habits, and breaks) is important as these behaviours are again inextricably linked to psychosomatic health (Allen et al., 2015). The combination of increased sedentary behaviours when working, decreased exercise, and deterioration in food's quality may have detrimental outcomes to individuals' health (Healy et al., 2012). In the absence of such evidence, links between important aspects of well-being at work (i.e., psychosomatic) and remote e-working cannot be made, restricting our full understanding on the topic.

### **2.9.1. Benefits of a Multi-dimensional Approach to Remote E-workers' Well-being**

Van Horn et al.'s (2004) five dimensional model seems to provide a relevant and meaningful contextual framework when investigating the relationship between remote e-

working and well-being at work. The 26 included studies that explored more than one well-being dimension enable us to see different, and simultaneously pivotal, angles of this relationship. For instance, autonomy was found to be a mechanism through which remote e-working decreased emotional exhaustion (Sardeshmukh et al., 2012), increasing job satisfaction (Gajendran & Harrison, 2007). Good working relationships also explained why remote e-workers were more (Fay & Kline, 2011, 2012) or less committed (Tietze & Nadin, 2011) to their organisations. Additionally, Bentley et al. (2016) suggested that the available organisational support, and support around remote e-working linked to both increased job satisfaction and reduced psychological strain; reducing feelings of social isolation. Synthesising well-being dimensions together may also bring critical thought into this growing topic. For example, instead of taking for granted that working in solitude will lead individuals to become socially isolated, we could explore where they may also benefit (e.g., greater satisfaction) due to filtering out office-based distractions (Fonner & Roloff, 2010). This review portrays how the combination of the aforementioned dimensions influence one another, resulting in a more representative reflection of the relationship between remote e-working and well-being at work.

### **2.9.2. Overall Assumptions about Remote E-working and Well-being Dimensions**

Beyond the specific conclusions drawn about each individual well-being dimension, some additional generic assumptions are presented below.

Firstly, as previous reviews have highlighted (e.g., Sullivan, 2003; Allen et al., 2015) a variation in how remote e-working has been defined is noticeable. Not all studies have been clear about the extent to which employees are e-working remotely, or the actual location that work is conducted. Although an effort was made to ensure transparency when describing the studies included, readers should still account for this diversity in samples used when interpreting the current summary. A need to better understand today's

workplace is highlighted, since employees are not exclusively working in office or home locations, but also in places such as customer sites, hotels, airports, and cafes (Maitland & Thomson, 2014).

Secondly, this review emphasises that current research has not considered the degree to which ICT use, which is an integral part of working away from the main office (Leonardi et al., 2010), may particularly influence remote e-workers' well-being at work. Technostress is a growing topic in the general working population and it refers to the stress experienced by end users, resulting from extensive ICT use and the demand to stay updated with technological changes (Ragu-Nathan et al., 2008). Suh and Lee's (2017) study is the only one that examined technostress within remote e-workers. The authors suggested that, the degree to which remote e-workers deal with high task interdependence and low autonomy, in conjunction with technology stressors, can lead to technostress. This simultaneously leads to less job satisfaction. Thus, it is essential to identify how ICT use appropriateness and enactment in different work activities when e-working remotely may be another factor that influences remote e-workers' well-being (Boell et al., 2016).

Thirdly, as according to Anderson et al. (2015), individuals were more likely to experience positive emotions, when e-working remotely, when they were more open to experience, ruminated less, and had more social connections outside their workplace. In a similar vein, workaholic individuals were found to be more satisfied with their job when e-working remotely (Virick et al., 2010) than the rest of their colleagues. These findings embrace the statement that 'one size does not fit all'. Thus, investigating employees' working preferences and personality types may enable us to better foresee who will benefit the most by remote e-working. As this review points out, this is a current gap in our knowledge.

Fourth, a growing idea embraced by a number of studies (e.g., Gálvez et al., 2011) is that organisational culture and environment may play a pivotal role to remote e-workers' well-being. Lautsch, Kossek, and Eaton (2009) have proposed that helpful and supportive organisational culture (where supervisors encourage individuals maintain their performance even when e-working remotely), implement remote e-working practices more effectively. Characteristically, perceived support from the organisation, along with the support from supervisors and peers, positively influenced individuals' job satisfaction, reducing psychological strain and social isolation (Bentley et al., 2016). It is thus strongly suggested that social support is very important for this working arrangement to succeed (Haines, St-Onge, & Archambault, 2002). The impact of organisational culture and environment could probably be understood under the psychological contract theory. In particular, remote e-workers and their organisation have to adjust to a different psychological contract. When working outside an office environment, individuals are still trusted to provide good quality work, and equally organisations are trusted to keep an eye on these employees, without 'forgetting' about them as they are not always physically present. The challenge here, is that some organisations (e.g. in the U.K.) have not yet established policies to safeguard healthy ICT use; maintaining a perception that managing ICT for work purposes is a mainly individual responsibility (McDowall & Kinman, 2017). This can be a particular issue for remote e-workers whose working life, as described above, heavily depends on ICTs.

Lastly, advanced methods are needed to reach more robust conclusions. For instance, longitudinal data is vastly absent, something that obstructs our ability to define causation and the actual direction for most of the relationships discussed above (Schieman & Glavin, 2011) and to reveal actual mechanisms between these dimensions. Additionally, it would be useful to conduct more diary studies which will allow us to

capture a within person change on levels of well-being, as opposed to a cumulative ‘mean’ group change. An advantage of this method is that it decreases retrospective bias, which often threatens the validity of cross-sectional surveys (Reis & Gable, 2000). Moreover, although researchers’ fair attempt to examine moderating and mediating relationships, our knowledge is still in its infancy; with the exact psychological processes that underlie the link between remote e-working and well-being unexplored. Additional qualitative data could enable us to delve into and identify possible moderating and mediating factors, and consequently indicate how they operate.

### **2.9.3. Limitations and Future Research**

Despite the strengths of the current review, such as its rigorous theoretical and contextual framework and the breadth of information it provides there are some limitations that need to be addressed. Particularly, this review focuses on research within a specific time frame, excluding any research conducted, before and after the inclusion criteria. Consequently, future research including different studies could reach different conclusions. However, this is a usual limitation of both systematic reviews and meta-analyses (Harker et al., 2012). The trade-off is that systematic reviews may give good evidence when understanding previously conducted research (Petticrew & Roberts, 2006). Additionally, the current review excluded specific working populations, such as self-employed and disabled employees. Whereas, this enables better comparability of the obtained studies, it concurrently leaves unclear how remote e-working links to these employees’ well-being at work.

When it comes to future work, studies could focus on well-being dimensions that have been unexplored (i.e., cognitive, psychosomatic), and further examine underlying factors that may influence more frequently studied dimensions (i.e., affective, social and professional). As clearly suggested by this review a multi-dimensional approach such as,

Van Horn et al.'s (2004), may bring essential aspects into the discussion of remote e-workers' well-being at work. To the best of researchers' knowledge, there are no measures tailored towards assessing remote e-workers well-being at work, and a multi-dimensional approach may provide a good theoretical grounding when developing one. A measure would enable organisations to detect and manage any issues raised by remote e-working (as discussed earlier), enabling organisations to put specific actions and strategies in place and to make sound policy recommendations. Lastly, this systematic review has exclusively focused on remote e-workers' well-being at work without considering their counterparts who are still full-time based in an office location. Research suggested that office-based employees experienced greater work-family conflict when their colleagues were absent from the office (Lautsch, Kossek, & Eaton, 2009). Thus, it is imperative for future research to explore if the change of the social milieu of the traditional office may occasionally improve the well-being of a few (i.e., remote e-workers) at the expense of others (i.e., office-based workers).

#### **2.9.4. Practical Implications**

Despite discussed limitations, we believe that this review can offer implications for practice to a variety of stakeholders. Considering that remote e-working's impact on well-being is complex, organisations should weigh both benefits and drawbacks. For instance, granting autonomy to individuals and avoiding micromanagement can act as a resource which may decrease feelings of emotional exhaustion and lead to greater job satisfaction. Additionally, conveying a sense of trust in that individual will appropriately conduct their work duties outside an office environment can increase individuals' loyalty and organisational commitment. Nevertheless, individuals need to be aware of the isolating nature of this way of working. As per this review, the fundamental role of maintaining good interpersonal relationships at work is especially heightened for individuals who



remotely e-work. Therefore, organisations are called to openly discuss ways in which isolating feelings may be ameliorated. In order to increase confidence in conducting their work and reduce isolation, organisations should be encouraged to create social support networks between remote e-workers, colleagues and supervisors. Good communications between remote e-workers and their office-based colleagues needs to be encouraged, especially when task interdependence is involved. Effective planning of remote e-workers' office presence could be a useful coping strategy. In other words, individuals can have flexibility around their work time and place, but simultaneously arrange face-to-face meetings at appropriate times. A good coordination of online work activities with colleagues is also needed for individuals who are working full-time away from an office location, in order to ensure that deadlines are met and projects are finished on time. Furthermore, providing information about career opportunities and mentors may be crucial to alleviate concerns about career advancement, resulting from a physical absence from the main office location.

## **2.10. Conclusion**

Considering the growing use of technology, and the consequent increase in flexibility around where work is conducted, organisations and employees need to be aware of both the benefits and drawbacks of remote e-working practices. Conclusions drawn on all five well-being dimensions indicate that we know more about employees' affective state, social, and professional life than we know about their cognitive functioning and psychosomatic well-being. Although, links between remote e-working and each of five dimensions seem to be both positive and negative, there is still a greater consensus toward a beneficial impact of this working arrangement. This review suggests that research within remote e-workers should incorporate: (1) a greater variety of remote e-workers, (2) identification of ICT use appropriateness and enactment on working tasks and its

influence on individuals' working lives (e.g., technostress), (3) personality traits as 'one size does not fit all', (4) a deeper understanding of organisational culture and climate, and (5) more advanced methods of conducting research (e.g., longitudinal data, diary studies, moderating and mediating relationships). This research proposes that adopting a multi-dimensional approach may provide a rigorous theoretical and contextual framework for both academics to better understand the relationship between remote e-working and well-being at work, and for practitioners, to enhance their knowledge surrounding implementing and managing remote e-working policies and strategies in a more effective manner.

## **Chapter 3: Research Strategy, Methodology and Design**

### **3.1. Overview**

This chapter sets out the methodology for the development of a new scale in E-Work Well-being (EWW), which is aligned to an existing and related ‘parent’ measure E-Work Life (EWL), as described in Chapter 1. Working within a Classical Test Theory (CTT) framework in order to develop the EWW scale is justified. The focus of the new scale is on the well-being of remote e-workers and further develops this strand from the existing EWL measure. Current literature indicates that working practices are changing and organisations are moving towards more flexible agile working practices (see Chapter 1 and Chapter 2). It is worth acknowledging that although the literature review in Chapter 2 was primarily focused on knowledge workers, who are the most likely to use remote e-working practices; the thesis overall will expand to cover a diverse sample of all types of remote e-workers. Focusing on knowledge workers allowed for better management of the wide literature base and enabled a systematic review of the topic, but no such restrictions were placed when conducting following studies. Particularly, this thesis has considered any type of employee who works remotely from their organisations and makes use of technology to stay in touch with colleagues, supervisors, and managers. It is worth noting that the aspect of working remotely was not adequate to include individuals in this research, as they also had to be making use of technology to stay connected to their workplace. The new EWW scale aims to support organisations, managers, and individuals offering them a validated method to measure remote e-workers’ well-being at work. Once the EWW scale is validated, it can then be used along with the EWL scale to assess how working in a more agile and flexible way can affect employees’ working and personal experience. Hence, researchers, organisations, managers, and employees can benefit from the generation of theoretically-based, yet easily employed valid instruments, when

attempting to understand this particular way of working and the impact it may have on individuals.

### **3.2. Introduction**

In order to develop a psychometrically sound instrument (i.e., the EWW scale) a Classical Test Theory (CTT) framework was employed, as presented by DeVellis (2016). CTT has been used extensively for psychological test development, going as back as the early 1900s and work conducted by Spearman (1904). This chapter, thus, presents and discusses eight suggested steps that need to be utilised when creating, testing, and validating the EWW scale. These steps are displayed in Table 3.1. and are in-depth described in a following section (i.e., 3.3.). This thesis also finalises the scale development process for the EWL scale, by undertaking only the last of the eight step and optimising the length of the scale (see Chapter 7). Reliability is discussed as it shows that the instrument is performing in a consistent way. Additionally, this chapter supports the role that validity plays when constructing a new scale and the importance of items representing the constructs they are suggested to measure (i.e., face and content validity), covering all the important aspects of the construct under study (i.e., construct validity: discriminant and convergent validity), and predicting other organisational outcomes (i.e., criterion-related or predictive validity). Finally, this chapter discusses the epistemology of this piece of research and ethical issues.

### **3.3. The scale development process**

According to DeVellis (2016) researchers develop scales in order to measure psychological phenomena, which they consider to exist because of their theoretical worldviews, and that they are not capable of assessing directly. Whereby behaviours are intangible, to indicate a phenomenon, a carefully constructed and validated scale may be

Table 3.1.

*Scale development process following classical scale development method (DeVellis, 2016).*

Step one	Clear determination of the underlying construct being measured— theory based, or new directions.
Step two	Generation of an item pool.
Step three	Determination of the format for measurement.
Step four	Initial item pool reviewed by experts.
Step five	Consideration of inclusion of validation items.
Step six	Administration of items to a development sample.
Step seven	Evaluation of the items.
Step eight	Optimisation of the scale length.

an appropriate means in order to assess this phenomenon. DeVellis (2016, p. 15) has therefore suggested that:

*“Measurement instruments that are collections of items combined into a composite score and intended to reveal levels of theoretical variables not readily observable by direct means are often referred to as scales”.*

It is crucial for researchers to follow the appropriate procedures and make sure that the newly devised scales they are using are valid and reliable from the onset. According to Hopwood and Donnellan (2010), when conducting psychological research, it is pivotal to evaluate the psychometric properties of our psychological measures. This is inextricably related to the validity of the scientific study of thoughts, feelings, and behaviours. It can, thus, be suggested that sound scales are essential for psychological science to move forward and to increase the trustworthiness of our findings. Nevertheless, there are some issues concerning scale development and measures used. Barrett (1972) suggested that, even though there are some fundamental reasons why researchers arrive at varying conclusions, one of the challenges in conducting survey research is making

sure that the measurement of the theoretical constructs under examination are accurate. According to Schoenfeldt (1984), using flawed measures that either do not relate to the key constructs, or they are not valid and/or reliable, has even caused researchers to be unable to publish their studies; something which supports the importance of sound measurement. Measurement problems often lead to difficulties in interpreting results in different areas of research (for examples see research about organisational commitment in Meyer, Allen & Gellatly, 1990, or research about power and influence in Schriesheim, Hinkin & Podsakoff, 1991).

### **3.3.1. Scale development based on classical measurement theory/classical test theory (CTT)**

There are two main approaches when developing a scale, namely: the classical measurement theory, also known as Classical Test Theory (CTT) and the Item response theory (IRT; DeVellis, 2016). These two approaches share several fundamental characteristics, but also have some substantial differences; and it was proposed that choosing between the two often depends on the context of use (Jabrayilov, Emons, & Sijtsma, 2016).

Regarding their similarities, both CTT and IRT strategies are focusing on developing items to form a scale, which will then allow assessing the construct under study (i.e., latent variables; Embretson, & Reise, 2013). Both approaches require unidimensionality among items assessing a particular construct (Embretson, & Reise, 2013). In other words, in order for items to be combined into a scale, it is expected that all of them share a single common underlying concept. In cases where the constructs of interest are multidimensional, then unidimensional item groupings are still expected to be present and are treated individually (DeVellis, 2016). For example, in the EWW scale, which is developed and presented in the following chapters of this thesis, well-being is

proposed to manifest itself into five dimensions and their sub-dimensions (see Figure 1.1., p.10). These sub-dimensions are expected to be prominent (and thus illustrated in the factor analysis), with items grouping under each dimension/sub-dimension of well-being.

Nevertheless, CTT and IRT measurement approaches have some main differences. Firstly, when using the IRT approach, an attempt is made to establish certain characteristics of items without taking into consideration the respondents who are completing the tool (Steyer, Smelser, & Jena, 2001). Classical methods in contrast, consider that the measurement tool and the individuals who are responding to it are inextricably associated (DeVellis, 2016). That is, when computing a scale's reliability following classical strategies, potential correlations among the items included in that scale are also considered. Secondly, whilst CTT aims to measure each individual's average response levels, IRT estimates whether individuals' response to an item lies in a particular category (Embretson, & Reise, 2013). While CTT focuses primarily on composites and the overall scale score, IRT considers individual items and their particular characteristics (DeVellis, 2003). This is also the reason why, when working towards the improvement of a scale's reliability from a classical measurement approach, items are either deleted or added, looking at the items as a whole. However, in IRT measurement approaches the best items are chosen, something that indicates the important contribution that individual items have to reliability.

The fact that IRT models investigate each individual item instead of treating them equally (Cueto & Leon, 2012) is the main reason that IRT has been more prominently used in relation to cognitive ability tests (e.g., Chan, Drasgow, & Sawin, 1999). Put differently, IRT has been mostly used in relation to cognitive testing, aiming to identify the best questions to assess and discriminate participants (Nering, & Ostini, 2011). On the other side, CTT has been extensively used in social sciences, where researchers are

interested in participants' composites and overall scores (DeVellis, 2003). The core steps involved in developing the new scale, as according to the classical approach, are thoroughly presented and discussed in following sections of this chapter. It is worth mentioning that the E-Work Life measure (Grant et al., 2011) was developed using CTT.

### **3.3.2. Reliability**

As reported by Cappelleri, Lundy, and Hays (2014) “reliability refers to the proportion of variance in a measure that can be ascribed to a common characteristic shared by the individual items (p. 653)”. The analysis of internal consistency is used to calculate reliability, through covariance between items. Specifically, internal consistency indicates the degree to which the items in the measurement instrument are homogenous, or whether individual item scores are correlated with the overall test score (Hinkin, 1995). The CTT indicates that the developed instrument is measuring a single phenomenon (i.e., latent variable). Considering that the items are logically connected to the latent variable it is, consequently, expected that items are strongly related with one another (DeVellis, 2016). Thus, high inter-correlation between items signifies that the scale is internally consistent.

Researchers have extensively used Cronbach's (1951) coefficient alpha as a measure of internal consistency (i.e., reliability). Alpha refers to the proportion of shared variance explained by a common source (i.e., the latent variable that underlies the items; DeVellis, 2016). Thus, it is expected that there will be some shared or common variance in items, which is due to the latent variable. Cronbach's alpha scores can range between 0 and 1, with researchers suggesting a value of .70 - .80 being acceptable (Kline, 2000; Field, 2013). Yang and Green (2011) outlined some reasons why coefficient alpha has become so popular within scholars. Particularly, coefficient alpha can be very easy to interpret. In addition, coefficient alphas can recommend the deletion of items to improve internal consistency, which then informs the revision of scales. There is also a consensus



and a normative framework between researchers when it comes to the interpretation of coefficient alphas which are grouped to small, medium, and large.

Factor Determinacy coefficients have been used as an alternative to Cronbach's alpha in order to measure the internal consistency of the factor solution. Factor Determinacy scores indicate the extent to which the true factor score is measured in the model (Grice, 2001); showing the extent to which the estimated and true factor scores are correlated (Muthén & Muthén, 2016). The criteria for the Factor Determinacy scores are the same as for the Cronbach's alpha; the closer the coefficient is to 1, the better the factor is defined by the observed variables. Tabachnick and Fidell (2007) suggested that a score needs to be  $\geq .70$  to support scale's good internal consistency.

In following chapters (Chapter 6 & Chapter 7), SPSS has been used to perform preliminary checks and explore relationships between variables investigated. Simultaneously, Mplus has been used to run EFA and CFA for the E-Work Well-being scale, and CFA for the E-Work Life scale. Thus, to test reliability, Cronbach's alphas are calculated for all the existing and validated scales examined, and Factor Determinacy scores are calculated for both the EWW and EWL scales (as these are available from the Mplus software).

### **3.3.3. Validity**

Validity is an evaluative judgment about whether empirical evidence and theoretical grounds combined can provide adequate and appropriate interpretations of a construct, making use of test scores (Messick, 1987). Different types of validity are described below.

#### **3.2.3.1. Face validity assessment and/or content validity**

Researchers from the field have often used the terms of face and content validity interchangeably (Hardesty & Bearden, 2004). Although these two terms share some theoretical similarities, there is an important conceptual difference, which is worth

identifying. Face validity refers to the degree to which the items of a measure mirror what the measure is proposed to measure (Nunnally & Bernstein, 1994). When the items have face validity, it is expected that the respondents or users of the assessment instrument would judge that items seem to appropriately correspond and assess the proposed constructs (Allen & Yen, 1979). A face valid item should be clear about what it is measuring “on its face” (Rubio et al. 2003). Content validity was, in turn, proposed to show the extent to which the pool of items included in a measurement tool, comprise a proper sample of the theoretical content domain of a construct (Nunnally and Bernstein, 1994). To sum up, content validity proposes that a measure adequately assesses the domain of interest (Hinkin, 1995). A prerequisite for meeting content validity is that the items are face valid (Hardesty & Bearden, 2004).

An analogy to compare and contrast face and content validity has been provided by Hardesty and Bearden (2004). These researchers have presented the domain of a construct as an analogous of a dartboard. Using this dartboard analogy, items are face valid when they manage to hit the dartboard; whereas in the case they do not, it is signified that items do not represent the investigated construct. In regards to content validity, darts (i.e., items) need to be spread all over the board in order for the construct to be fully represented. Considering this, if darts are gathered on only one side of the board, it is suggested that items are capturing only partly the theoretical properties of the construct. This would, then, suggest that the measure does not have content validity. Hence, in order to establish content validity, there is a great need that the generated items are not overlapping, but they are instead sufficiently tapping into the whole domain of the construct. Thus, face validity denotes that each item describes one aspect of the construct, whereas construct validity denotes that the set of items offer a comprehensive coverage of the key aspects of the construct.

Consequently, the first validity assessment of the E-Work Well-being (EWW) scale should be around developing face and content valid items that reflect the examined construct. To this end, experts from the field were asked to review items commenting firstly on items' clarity and whether they reflect what they are proposed to measure (i.e., face validity), and secondly, on the degree to which the items touch upon the essential issues when assessing remote e-workers well-being at work (i.e., content validity). Chapter 5 thoroughly discusses and elaborates on this process followed during the development of the EWW scale.

### **3.3.3.2. Construct validity**

Construct validity is focusing on the relationship between the measurement instrument and the latent variable or, in other words, the phenomenon it is attempting to assess (Hinkin, 1995). Therefore, construct validity proposes that any operationalisations made (i.e., definitions of the measurement of the phenomenon) should be based on and be consisted with theoretical constructs. Lord and Novick (2008) have suggested that construct validity can only be assessed indirectly. This happens because we are observing how the new measure links to other reliable indicators of the latent variable, instead of getting the true scores of the variable. There are two key components of construct validity, namely, *convergent* and *discriminant validity* (Schwab, 1999). Firstly, convergent validity shows that the developed measure is associated with other relevant existing measures. An example would be Cable and DeRue's (2002) attempt to assess convergent and discriminant validity of employees' person–organization fit perceptions. Their analysis indeed showed that employees' person–organization fit perceptions were associated with employees' organisational identification, perceived organizational support, citizenship behaviours, and decisions to stay at an organization, offering convergent validity evidence. Secondly, discriminant validity suggests that the developed

measure needs to be distinct from the constructs that it considers or the ones to which it relates (Fiske, 1982). The more narrowly defined a construct is, the easier it is to be different from other constructs. Whereas the broader it becomes, the more likely it is that the construct will share common grounds with existing constructs. For instance, Lucas, Diener, and Suh (1996) investigated the discriminant validity of well-being concepts (i.e., positive and negative affect, life satisfaction, self-esteem, and optimism). Their findings revealed that the concept of life satisfaction was distinguishable from the concepts of: positive and negative affect, as well as from the concepts of optimism and self-esteem. In addition, positive affect was found to be distinct from negative affect, as optimism was distinct from negative affect. Both the pilot study presented in Chapter 6 and the main study presented in Chapter 7 assessed EWW scale's construct's validity.

#### **3.3.3.3. Criterion-related validity (or predictive validity)**

A criterion valid measurement instrument can predict outcomes for another independent measure (Hinkin, 1995). Consequently, criterion validity is often referred to as *predictive validity*. Compared to construct validity, which refers to the pattern of the relationships between the measure and similar constructs, criterion validity assesses the measure's ability to predict relevant outcomes (Zumbo & Chan, 2014). In previous research, for instance, the construct of organisational climate was a contributing factor to occupational stress (Griffin, Hart, & Wilson-Evered, 2000), and negative affectivity was a contributing factor to job satisfaction (Moyle, 1995). It is worth noting that, when assessing criterion-related validity, researchers are not interested about whether the construct under study precedes, coincides, or follows the criterion (e.g., behaviour), but they are interested about how strong the relationship is (DeVellis, 2016). Both Chapter 6 and Chapter 7 are assessing EWW scale's criterion-related validity.

### **3.3.4. Core steps in scale development**

#### **3.3.4.1. Step one: Clear determination of the underlying construct being measured**

As a first step when developing a scale, it is of great importance that the researchers determine what the underlying construct is by considering and reviewing fundamental theories related to the phenomenon (Clark & Watson, 1995). After reviewing scale development articles, Worthington and Whittaker (2006) concluded that the theoretical groundings of newly devised scales can aid greatly to clarity, resulting in well-grounded scales. In other words, reviewing existing theory and literature allows for a clear and transparent definition of the latent variable. The latent variable is defined as “a cause of the item score”, or otherwise, being the underlying variable that is causing a set of items to take on certain values (DeVellis, 2016, p.25). Since latent variables cannot be directly measured due to true scores being inaccessible, researchers measure latent variables indirectly by investigating observed scores of their own developed tools. It has, therefore, been highlighted the need of newly established measures to capture the underlying latent variables they are intending to measure (Worthington & Whittaker, 2006).

Scale developers often create measurement instruments to assess specific constructs, which are differentiated from existing instruments (Anastasi 1988). The specificity in regards to the construct of interest is crucial as it defines the scope of the newly devised tool (i.e., broad or specific) and any certain populations that will be investigated (DeVellis 2016). A characteristic example would be the plethora and variety of measures used by researchers to assess well-being. Particularly, well-being has been conceptualised and assessed in many different ways among researchers. In their attempt to investigate well-being, researchers have included, among others, quality of life (e.g., Burckhardt, & Anderson, 2003; Flanagan 1982), positive and negative affectivity (e.g., Van Katwyk, Fox, Spector, & Kelloway, 2000), but also positive mental health (e.g.,

Tennant et al. 2007). In all of these cases, researchers had clarified the way they conceptualised the construct of interest (i.e., well-being) which, in turn, influenced and guided the development of their final items.

When developing the EWW, the PhD researcher decided to conduct both a systematic review of the literature and in-depth interviews with a good range of remote e-workers to investigate the relationship between remote e-working and well-being at work. This method was expected to provide sufficient clarity around the constructs under study. Initially, as Chapter 2 presented, a systematic review enabled an exploration of the relationship between remote e-working and each one of the five well-being dimensions (i.e. affective, cognitive, social, professional, and psychosomatic). Systematic reviews can allow researchers to collate all relevant literature conducted around a specific topic, and provide a great insight into the phenomena under study (Petticrew & Roberts, 2006). This is, consequently, expected not only to provide a very good understanding of the impact that remote e-working may have on well-being, identifying both challenges and gains, but also to enable a review of well-being measures used within remote e-working populations. Additionally, as Chapter 4 presents, semi-structured interviews with a representative population of remote e-workers were also undertaken. The interview data were used to gain a greater insight into the whole remote e-working experience and its precise impact on well-being at work, considering each one of the work-related dimensions (Silverman & Patterson, 2014). Additional information about the systematic review and the qualitative study (i.e., semi-structured interviews) methodology can be found in Chapter 2 and Chapter 4 respectively.

Consequently, the findings from the systematic review and the interviews conducted guided and enlightened the item generation for the E-Work Well-being scale (see Chapter 5), and established examined constructs. Using a combination of methods

was considered to form a robust way to define the constructs under examination (i.e., dimensions of well-being at work) while simultaneously recognising important issues that may concern its targeted population (i.e., remote e-workers). Additionally, this kind of methodology establishes the new measure's validity that is fundamental to its measurement adequacy (Schriesheim et al., 1993).

#### **3.3.4.2. Step two: Generate an item pool.**

Once the theoretical constructs have been explored and defined from previous literature, then the researcher is looking to develop a pool of items that reflect the underlying latent variable. Although the final measurement instrument should be brief (Rubio et al. 2003) at this stage a large pool of items is warranted so the researchers have the ability to choose and retain the best items throughout a series of validation processes (Clark & Watson, 1995). The initial pool of items can even be three or four times larger than the desired final scale (DeVellis, 2016). Although there is no guidance that is followed by most researchers, regarding the number of items that should be included, researchers suggested that a retention of four to six items per construct might be ideal (Hinkin, 1998). Previous research also proposed that in order to test the homogeneity of items four items per construct are, at least, needed to comprise a factor (Harvey, Billings, & Nilan, 1985).

Researchers have presented some characteristics of good and bad worded items that need to be acknowledged. In particular, items should be as clear as possible, reducing any ambiguity that may confuse the respondent (Clark & Watson, 1995). Length can often lead to complexity, making it difficult for the reader to understand what the items are attempting to assess. Therefore, it has been suggested that lengthy and unnecessarily wordy items should be avoided (Clark & Watson, 1995). However, the meaning of the items should never be sacrificed for brevity. Additionally, double-barrelled items, as they are called, can be problematic. Double-barrelled items are conveying two separate issues

or topics, but the respondent is still called to give one answer. The issue with those items is that not only they take away the focus from the actual construct under study, but they can also make it harder to tell with which aspect of the item the respondent agrees.

Furthermore, it has been extensively discussed and debated about whether the items should all be in the same direction, or whether both positive and negative items (i.e., reverse scored) should be utilised. When both positively and negatively worded items are used, that means that some items will show high levels of the latent variable when endorsed and some others will show high levels of the latent variable when not endorsed (DeVellis, 2016). Scholars have suggested that although using both negatively and positively worded items can reduce acquiescence bias (i.e., participants conform less to the directionality of the items); they can simultaneously lead to invalidation of an already validated and reliable scale (Barnette, 2000; Knight, Chisholm, Marsh, & Godfrey, 1988). For example, Pilotte and Gable (1990) found that when using mixed items stems, to assess a computer anxiety scale, a different factor structure was present; as compared to using all directly or negatively worded items stems. In addition to this example, when Currey, Callahan, and DeVellis (2002) were testing a five-item scale including four negative items and one positive about reaction to illness, the positive item was repeatedly performing poorly. It was only when the word “not” was added to change item’s valence that the item’s performance improved. Researchers have suggested that this could potentially happen due to a ‘method factor’, which is separate from the factor underlying the conceptualised construct (Woods, 2006). This method factor does not seem to be substantively meaningful and it could result from respondents’ responding carelessly and aberrantly to items which are syntactically different from the other items of the scale (Woods, 2006). Hence, using items worded in a different direction can have more disadvantages than advantages.



#### **3.3.4.3. Step three: Determine the format for measurement**

Likert scales have been evidenced to be very useful in behavioural research as they are used to assess individuals' opinions, attitudes, and beliefs (Kerlinger, 1986). When using a Likert scale, the respondents are asked to rate how much they endorse what the item/statement is declaring; normally using response options of agreement or frequency (Boone & Boone (2012). The response options may vary depending on the researchers' interests and objectives, but it is expected that their adjacent pair of responses have approximately equal intervals (DeVellis, 2016). Despite the opposing opinions about the number of response categories, it was suggested that including at least five response categories is desired (Allen, & Seaman, 2007). Lissitz and Green's (1975) study provided strong evidence for the rejection of seven scale points as it was suggested that scales' reliability increased up to the use of five points, but then it levelled off. Thus, a five-point Likert scale would be appropriate to use. A five-point scale will thus be used in the EWW scale, and has already been successfully used in the EWL scale (Grant et al., 2019).

The scaling of items will generate variance among respondents which needs to be considered when performing subsequent statistical analysis (DeVellis, 2016). There has been a controversy in the field regarding the best way to analyse Likert data, which is dependent on whether this data is considered as continuous (Dolan, 1994; Olsson, 1979) or categorical (Lubke, & Muthén, 2004). According to Boone and Boone (2012), researchers should first and foremost distinguish between Likert-type versus Likert scales. Likert-type scales are consisted of single questions, which are not combined with the rest of the items to provide a composite score. Therefore, although respondents' answers express a 'greater than' relationship, it is still not clear how much greater the scores on these items are. This, consequently, suggests that the Likert-type items should be analysed in the ordinal measurement scale (i.e., categorical variables). In contrast,

Likert scale items, according to Boone and Boone (2012), are all used to indicate the degree to which individuals possess a specific trait, attitude, or behaviour. The researchers achieve this by calculating a single composite score, which is going to be used in the data analysis process. These composite scores gained in this case, allow a greater insight into the 'greater than' relationships. Therefore, it is suggested that the composite score for Likert scales should be analysed at the interval measurement scale. Interval measurement scales are proposed to have an absolute zero and are measured along a continuum with points on the scale having a meaningful relative distance between (i.e., continuous variables; Ary, Jacobs, & Sorenson, 2010). Hence, in the case where the assumptions of normality are met, researchers are encouraged to follow parametric procedures even when they are using Likert scales (Olsson, 1979).

#### **3.3.4.4. Step four: Have initial item pool reviewed by experts**

Using a panel of content experts from the field can be an invaluable source of information when evaluating and revising newly developed scales (Rubio et al. 2003). The content experts are normally professionals who have wide experience and probably published on the topic under study. Therefore, their input may be pivotal when evaluating the construction of the newly developed scale and its suitability for psychometric testing (Davis, 1992). As previously discussed, this process allows for a first assessment of the scale's face and content validity (Rubio et al. 2003). Experts can comment on how representative and clear the new items are and make explicit suggestions about how to improve both individual items and the measure as a whole (Rubio et al. 2003). They could perhaps suggest elimination of some items, alternative wording, or any items that need to be added. Nevertheless, Rubio et al. (2003) claimed that this content validity assessment process has its limitations that researchers need to consider. In particular, researchers have highlighted that experts' feedback can be subjective in nature, meaning that their own

biases may interfere with the recommendations they make. Consequently, this may imply that the leading researchers will have to critically perceive experts' feedback, and in cases where they disagree with it to justify why some changes to the scale may not be appropriate (DeVellis, 2016). Additionally, Rubio et al. (2003) suggested that this initial content validity check of the scale does not disregard the importance of conducting additional psychometric testing. Although there has been diversity among researchers in regards to the ideal number of experts that need to be involved, it has been recommended that three content experts may be the minimum (Lynn, 1986), which is the number of experts approached when evaluating the EWW scale (see Chapter 5).

#### **3.3.4.5. Step five: Consider inclusion of validation items**

To this point, the researchers should end up with a meaningful set of items from which the latent variable is likely to be captured. According to DeVellis (2016), researchers could consider including additional existing validated tools, in the same questionnaire, in order to assess and determine final scale's construct and criterion-related (predictive) validity. As already discussed, construct's validity of the newly devised instrument is pivotal. If theory supports that the studied phenomenon (i.e., latent variable) has a meaningful relationship with other constructs, then we would expect to find a relationship between the developed instrument scores and the scores from already existing measures. DeVellis (2016) suggests that the researchers do not have to wait for the finalisation of the scale to start exploring its different types of validity, but instead they could assess it concurrently. At the end of this process, it can either be suggested that the scale possesses construct and criterion-related validity, or that the items are not performing as expected. To enable the assessment assessing the EWW scale's validity validated measures were included in both the pilot and main study (see Chapter 6 and Chapter 7).

#### **3.3.4.6. Step six: Administer items to a development sample**

Once the initial pool of items has been decided, as well as any additional measures to be used for validity purposes, the researchers are ready to administer the questionnaire to a sample of individuals. MacCallum, Widaman, Zhang and Hong (1999) used a theoretical and mathematical framework to guide their analysis of artificial data, examining effects which may have an impact on factor analysis findings. The researchers suggested that although small samples could be used, researchers need to be cautious as “with such small samples, the likelihood of non-convergent or improper solutions may increase greatly, depending on levels of communality and overdetermination” (p. 96). The communality of a variable refers to the amount to which the common factors account for the variance within the variable; and over-determination of a factor is defined as the degree to which the number of variables sufficiently represent the common factor (MacCallum, Widaman, Preacher, & Hong, 2001). The risk of having a small sample and, thus, a low ratio of participants to scale items (i.e., parameters) is that the correlations among items may be dependent on chance. Consequently, in future re-administrations of the scale the items that initially seemed to be performing well may not perform well anymore.

Irrespective of the extensive discussions about the ideal sample size, researchers seem not to agree on an exact rule for the number of participants needed to run factor analysis. It has often been advised that researchers need to have between five (Bryant & Yarnold, 1995) to ten participants per estimated parameter (Schreiber, Nora, Stage, Barlow, & King, 2006). Nevertheless, the use of smaller samples is a common practice within social and behavioural research (MacCallum & Austin, 2000). Specifically, samples of at least 200 people were suggested to be adequate (Jung & Lee, 2011). This reflects MacCallum et al.’s (1999) proposition that, levels of communality may be critical as if they are consistently high ( $> .60$ ), then the sample size is weighted less as well as the

minimum participants/parameter ratio. Consequently, MacCallum et al. (1999) suggested that when the level of communality is high ( $>.60$ ) a sample size of 100 may be sufficient. Additionally, in the cases where the communalities lessen, but they are still in the range of .50, along with researchers having well-determined factors, then it may be appropriate for researchers to use a slightly larger sample, in the range of 100 to 200. The researchers normally have some prior knowledge (or expectations) about the level of communality of the variables and the number of predetermined factors, based on previous research.

For the purposes of the present PhD thesis, a non-probabilistic snowball sampling was considered the most effective and realistically achievable strategy. This was due to difficulties identifying remote e-workers in the general population at the time the data was collected (still a relatively limited practice in organisations). In addition, there was no available fund to spend on data collection, making alternative sampling strategies difficult to use. The only exception was recruiting participants for the qualitative study for which the PhD researcher was granted a funding from a Coventry University scheme. This funding allowed to establish an active collaboration with a company supporting remote e-working practices. Each chapter provides additional information about the sampling method used, and any precautions taken to reduce the pitfalls of using a non-probabilistic snowballing method. In all cases, the volunteered participants were asked to participate in the studies only if they were eligible against a remote e-working definition provided. This definition was: ‘spending at least a portion of your working time away from your head office (no matter if this is home, another site of the company, hotel or train) making use of technology to stay connected to your workplace’ (Charalampous et al. 2018).

#### **3.3.4.7. Step seven: Evaluate the items**

At this stage of the scale development process, the researcher is interested in examining the performance of the developed pool of items, in order to confirm that the items appropriately and sufficiently measure the latent variable. According to DeVellis (2016), this is the “heart of the scale development process” (p.139). As this chapter has previously discussed, the researchers are called to assess some qualities that the items should possess, namely, reliability and validity. Furthermore, to examine how items are performing, exploratory and confirmatory factor analyses, as well as exploratory structural equation modeling analyses can be conducted (see Chapter 6 and Chapter 7). These analyses are presented and discussed in a subsequent section (i.e., 3.2.3.) of this chapter.

#### **3.3.4.8. Step eight: Optimise scale length**

After assessing the quality and the relevance of the developed items, the researchers need to decide upon the optimal length for their scale/s. This is a pivotal decision as the scale length can have an impact on reliability, with longer scales tending to be more reliable (DeVellis, 2016). Nevertheless, shorter scales can be more pleasant and less tiring for respondents. Therefore, the researchers need to sometimes choose between brevity and reliability. Regardless of that, the meaning provided by the scale should never be sacrificed for the sake of brevity. One method to consider when optimising scale length, as proposed by DeVellis (2016), is the use of *split sample*. In particular, having a sufficiently large sample might allow the researchers to use one sample to check for internal consistency (reliability), evaluate the items, and arrive at a proposed final version of the scale; and use the second sample to replicate these findings. As mentioned earlier, the current research not only suggests an optimal scale length for the EWW scale, which was newly devised, but also proposed an optimal scale length for the already developed EWL scale (Grant et al., 2019).

### 3.3.5. Factor analysis

There are two functions when using a factor analysis method. Firstly, by conducting factor analysis the researchers are investigating the number of constructs, or in other words latent variables, that underlie a list of items (Cureton & D'Agostino, 2013; McDonald, 1985). Additionally, factor analysis allows the researchers to combine a larger number of items in their analyses and, consequently, use fewer scores when exploring different phenomena. For instance, as described in Chapter 1 (see Appendix B), the E-Work Life scale comprised 17 individual items, where four dimensions were revealed, tapping four different latent variables (i.e., *Work-Life Interference*, *Productivity*, *Organisational Trust*, and *Flexibility*; Grant et al. 2019). Moreover, factor analysis can indicate how much of the variation amongst a big set of items is because of the latent variable (Tabachnick & Fidell, 2007). As a consequence of all these functions, researchers are enabled to decide whether items are performing well, or whether they are problematic. For instance, it is likely that problematic items do not fit into any factorial categories yielded by the items or fit into more than one category (Worthington & Whittaker, 2006). This chapter expands upon the different factor analysis methods implemented in this research.

Researchers have determined cut-off points in order for the rotated factor loadings to be meaningful. According to Stevens (2002), for a sample size of approximately 200 people (as in the pilot study; Chapter 6), factor loadings above .36 can be considered as significant. Stevens (2002) also claimed that the larger the sample size, smaller loadings are needed. This is in line with Tabachnick and Fidell's (2007) suggestion that, as a rule of thumb, for a sample size of at least 300 participants (as in the main study; Chapter 7) a cut-off point of .32 is adequate to support a statistically meaningful factor loading. These cut-off points of .36 and .32 were, then, used in the pilot and main study respectively, in order to decide which items would be best to eliminate. Comrey and Lee

(1992) classified loadings above .45 as fair, above .55 as good, above .63 as very good, and .70 as excellent.

Before proceeding with factor analyses, researchers need to make some preliminary checks that can indicate the suitability of conducting factor analysis. In particular, researchers need to ensure that there is no multicollinearity, which is the presence of very high correlations between variables (Gray, & Kinnear, 2012). The Kaiser-Meyer-Olkin (KMO) test, as performed in SPSS, allows the examination of sampling adequacy, establishing that there is no multicollinearity among the variables (Field, 2013). The suggested acceptable limit for the KMO is .60 (Gray, & Kinnear, 2012). Additionally, Barlett's test needs to be considered to assess data sphericity, which indicates the equality of variance in different samples. The importance of data sphericity lies to the fact that it indicates variables' redundancy, in the case where these variables can be summarized with some factors (Snedecor & Cochran, 1989). The Barlett's test need to be significant (Field, 2013).

Below, three factor analysis methods are described, namely: Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), and Exploratory Structural Equation Modeling (ESEM); all of which were used in the present research.

#### **3.3.5.1. Exploratory factor analysis (EFA)**

Through EFA it is possible to investigate the observed pattern of correlations between a group of indicators (items) to test whether this can be reproduced by a smaller set of latent dimensions (Brown & Moore, 2012). As indicated in the term, EFA explores the number of common factors among the items, instead of predetermining those (Brown & Moore, 2012). Therefore, when researchers perform EFA may or may not have any underlying processes in mind (Tabachnick & Fidell, 2007). When an EFA is employed, the researchers are assessing the size and magnitude of the factor loadings to determine



which items are good indicators of the yielded latent dimensions (Brown & Moore 2012). A factor loading reflects the relationship between the variable (i.e., an item) and the underlying factor (Tabachnick & Fidell, 2007). Therefore, the higher the factor loading, the more the item/variable is purely measuring the factor. Considering its explorative nature, EFA is commonly used in the initial steps of the scale development process and construct validation. One of the limitations when performing EFA is its restricted ability to include a priory theoretical model which is going to be implemented into the measurement model (Myers, Chase, Pierce, & Martin, 2011). Nevertheless, applying exploratory techniques (i.e., EFA) was concluded to be good when investigating a hypothesised factor structure (Ferrando & Lorenzo-Seva, 2000; McCrae et al., 1996).

There are some importance metrics that need to be examined when performing EFA, which are thoroughly discussed by Tabachnick and Fidell (2007). When researchers attempt to define a factor, they are trying to interpret the latent variable (underlying construct) which ties the group of variables loading on it. Once factors are extracted, rotation is used to provide a greater interpretability of the factor solution by maximising the higher correlations between factors and variables and simultaneously minimising the ones which are lower. Data are rotated in two main ways, and specifically, by using an orthogonal or an oblique rotation. Orthogonal rotation assumes that the different factors do not correlate with one another, whereas oblique rotation assumes that factors do correlate. Hence, in an orthogonal rotation, factor loadings are interpreted as the correlations between variables and their underlying factor; whereas in an oblique rotation, factor loadings depict the unique relationship between the factor and the variable. In the factor analytic situation of the newly devised E-Work Well-being scale (Chapter 6 and 7), and when further validating the E-Work Life scale (Chapter 7) the oblique rotation

can be considered to be more appropriate because the factors/dimensions are theoretically expected to be correlated.

According to Tabachnick and Fidell (2007), when performing factor analysis, the observed correlation matrix is also provided, which indicates the correlation between the observed variables. The reproduced correlation matrix, on the other side, indicates the correlation produced from factors, being specifically implied by the factor solution. The residual correlation matrix shows the difference between the observed (i.e., original) and reproduced correlation matrices. The smaller the correlations shown by the residual matrix, the better the factor analysis is proposed to be, as this suggests that the observed and reproduced matrices do not differ much. When the similarity between the original and reproduced correlation matrices is high, and residual matrix closer to zero, the researchers can be confident to state that the extracted factors represent the original data.

The process of extracting and defining the number of factors, is supported to be critical in scale development (Tabachnick & Fidell, 2007). Similarly to the present PhD research, it is very common that researchers have theoretical models in mind, according to which variables are loading to specific latent variables. For example, Van Horn et al.'s (2004) work-related well-being model underpinned the development of the E-Work Well-being scale, suggesting the existence of five distinct dimensions. However, there are also methods which can enable this process. In particular, eigenvalues values greater than one ( $K > 1$ ) are very often used to show the presence of a specific number of factors, as they represent variance (Steger, 2006). When the eigenvalue is near zero then, no significant components/factors can be identified, whereas, an eigenvalue equal to 1 suggests that the factor accounts for the same amount of variance that a single variable does (Steger, 2006). Depending on the increase of the eigenvalue, a respective number of factors can be identified. Additionally, scree plots can also be used when extracting factors as they can

provide a visual illustration of the connected, by a line, eigenvalues (Catell, 1966). When researchers examine the scree plot to identify the presence of factors, they focus on the vertical decrease after the first factor (Steger, 2006), which has the highest eigenvalue, whereas for the rest of the factors eigenvalue becomes moderate and then small. Researchers are looking for “the point where a line drawn through the point changes slope” (Tabachnick & Fidell, 2007, p. 697). A benefit from using scree plots when identifying multidimensionality is that minor factors will not appear to be very convincing (Velicer et al., 2000; Zwick & Velicer, 1986). Once the number of factors is determined, researchers check the rotated loading matrix to determine which variables/items adequately load on each factor, and how much variance of the actual factor is explained by respective variables. Researchers have reinforced the importance of using multiple methods when extracting and defining factors (Steger, 2006).

As mentioned earlier, researchers have suggested that factor loadings above .36 can be considered as significant (Stevens, 2002) which can become slightly more lenient when the sample gets bigger (e.g., .32 according to Tabachnick & Fidell, 2007). However, in some cases items do not show a clear factorial structure, or in other words a simple structure, which is desired (Thurstone, 1947). When the items indicate a simple structure, it means that there is not a high correlation between factors. Particularly, factors have several variables that are highly correlated to them (i.e., items), with these variables not being highly correlating to other factors (i.e., concepts/constructs). When a simple structure is not present, and the variables are highly correlated to different factors, then the interpretation of factors become more ambiguous (Tabachnick & Fidell, 2007). As a rule-of thumb, many researchers have excluded variables which had cross-loading ranging from 0.3 to 0.4 (Schmitt & Sass, 2011).

Another important aspect of factor analysis is the evaluation of Factor Determinacy; which shows the “correlation between factor score estimates and the respective factor” (Brown, 2003, p. 1418). Grice (2001) proposed that in the presence of a high Factor Determinacy score, it can be claimed that the estimates of the factor score can appropriately replace the actual factor, when the latent structural analysis is not accessible. Adding to that, reliability coefficients show the quality of a factor model when representing the covariances among attributes (Tucker & Lewis, 1973; see section 3.2.2. for additional information).

### **3.3.5.2. Confirmatory Factor Analysis (CFA)**

Similarly to EFA, CFA also focuses on identifying a smaller set of latent variables among a set of items by assessing their observed relationships (Brown & Moore, 2012). CFA has often been used by researchers to establish fit of structures that were revealed by EFA (Ten Holt, Van Duijn, & Boomsma, 2010). In particular, CFA has been defined as “a type of structural equation modeling (SEM) that deals specifically with measurement models; that is, the relationship between observed measures or indicators (e.g., test items, test scores, behavioural observation ratings) and latent variables or factors” (Brown & Moore, 2012, p. 2). In these measurement models, priory specifications and restrictions on the latent variable are imposed (Brown & Moore, 2012). More explicitly, a key assumption of CFA is that different subscales would be perfectly unidimensional psychometrically (Morin, Arens, & Marsh 2016). This type of analysis, thus, assumes that cross-loadings between items and non-target factors are exactly zero, using a highly restrictive independent cluster model (ICM; Brown & Moore, 2012, p. 2). Whereas in EFA, all the parameters are examined (e.g., cross loadings). Hence, guided by solid theoretical and empirical foundations the researchers establish an underlying structure of the factor model which is why CFA is often used in later stages of the scale development process. CFA, in

other words, is preferred when a sufficient a priori measurement theory is present (Asparouhov & Muthén, 2009). A common problem among researchers is that when using multidimensional instruments, CFA models often struggle to fit the data (e.g., Marsh et al., 2009). As a response to that, ESEM has been proposed as a more flexible approach (Asparouhov & Muthén, 2009; Marsh, Nagengast, & Morin, 2013) and it will be discussed below.

### **3.3.5.3. Exploratory structural equation modeling (ESEM)**

Exploratory structural equation modeling (ESEM) is a result of integrating EFA and CFA approaches, creating a single overarching framework (Myers et al., 2011). According to Marsh et al. (2009) the use of ESEM brings together some of the advantages of CFA, EFA and structural equation modeling (SEM). More precisely, ESEM allows accounting for sources of psychometric multidimensionality of the constructs examined (Morin et al., 2016; Sánchez-Oliva et al., 2017). It is, thus, acknowledged that sub-dimensions may not be perfectly unidimensional psychometrically. Instead, it is recognized that items ‘might be associated with more than one source of true score variance’ (Morin et al., 2016, p. 117). Thus, items of conceptually interrelated concepts may be validly associated with one or more of the other items, something that may, consequently, lead to significant cross-loadings between the items (Barbaranelli, Fida, Paciello, & Tramontano, 2018). A key difference between CFA and ESEM analyses is that the former poses a strict requirement of zero cross-loadings (Asparouhov, & Muthén, 2009). By specifying non-zero cross-loadings as zero, in CFA analysis, the correlation between indicators representing different factors goes through their main factors only. This can be particularly restrictive for multidimensional constructs (Marsh et al. 2009), such as the E-Work Well-being (EWW) scale, where cross-loadings are justified by theory or expected due to the nature of items wording (Morin et al., 2016). Hence, by implementing ESEM

analysis, a better understanding of the sources of construct-relevant multidimensionality that may be involved in the EWW scale would be allowed (Barbaranelli et al., 2018). The ESEM analysis provides all the usual SEM parameters (e.g., residual correlations, regressions of factors on covariates, and regressions among factors (Asparouhov, & Muthén, 2009).

#### **3.3.5.4. Goodness-of-fit indices**

For all EFA, CFA, and ESEM, a set of goodness-of-fit indices can be assessed to evaluate the factorial solutions and identify models' good fit. The (i) chi square test is a commonly used measure of fit. A non-significant chi-square is required (Kenny, 2015). According to Kenny (2015) this measure is influenced by the size of the sample, as the bigger it is, the more likely it is that chi square is going to be significant. Therefore, a  $\chi^2$ :df ratio can also be less than 3:1 to show a good fit. Also, the larger the correlations present in one model, the poorer the fit (Kenny, 2015).

Additional measures of fit are (ii) the Comparative Fit Index (CFI) and (iii) the Tucker Lewis Index (TLI), which need to be above .95 (Hu & Bentler, 1999; Vandenberg, & Lance, 2000) Scores above .9 still indicated adequate fit (Bentler, 1990). Both CFI and TLI depend on the correlations in the data. The higher the average correlations between variables, the higher these scores are. Yu (2002) suggested that there is a high agreement and similarity between CFI and TLI which makes it reasonable to just report one of them. This proposition agrees with Kenny (2015) who claimed that TLI and CFI are indeed highly correlated, with the majority of researchers reporting solely CFI.

The (iv) Root Mean Square Error of Approximation (RMSEA) is another measure of fit and it needs to be lower than 0.06 along with a non-significant test of close fit (Steiger, 1990). Values which are lower than 0.08 were proposed to still show adequate/mediocre fit (MacCallum, Browne & Sugawara, 1996). In the estimate of the

RMSEA a 90% confidence interval can be computed where the lower value needs to be near zero (at least  $> .05$ ) and the upper value needs to be less than  $.08$ . According to Kenny (2015) the RMSEA is the most popular measure of fit. It is worth noting that, in small sample sizes (which were supported to lead to rejection of properly specified models; Yu, 2002) it was suggested that RMSEA can falsely indicate a poor fitting model, implying that RMSEA may not need to be considered in this case (Kenny, Kaniskan, & McCoach, 2015). Kenny (2015) made also the proposition that the in the case where RMSEA of the null model is less than  $0.158$ , then the CFI does not need to be computed (the value of the CFI is very likely to decrease in this case).

The (v) Standardised Root Mean Squared Residual (SRMR) has been defined as the standardized difference between the observed correlation and the predicted correlation, with a value of zero indicating a perfect model fit (Kenny, 2015). A value which is lower than  $.08$  is desired and it can indicate a good fit (Hu & Bentler, 1999). A cut-off point of  $.10$  was also proposed to be mediocre but still appropriate (Garson, 2008). This measure can be biased, especially in small samples. Hence, these goodness-of-fit indices were considered in both pilot (Chapter 6) and main studies (Chapter 7), by making any necessary adjustments.

When conducting factor analyses in Mplus, Maximum Likelihood (ML) estimation is used when items do not deviate from normal distribution; whereas the maximum likelihood estimation with robust standard errors (MLR) estimator is used as a more robust way to deal with non-normal data (Asparouhov & Muthén, 2005).

#### **3.3.6.5. Including error covariances/ correlated residuals in the model**

A last point to consider when performing CFA and ESEM analyses is researchers' attempt to add parameters in their analysis, in order to improve model fit. In particular, after looking at the modification indices, researchers have occasionally included error

covariances, or otherwise correlated residuals in their models in order to improve model's fit (Shah, & Goldstein, 2006). Correlated residuals show that two items/measures covary not only because of the shared underlying latent factor but also because of other reasons, such as assessment methods (e.g., scale-specific properties) which is generically called response set (Cole, Ciesla, & Steiger, 2007).

There has been some criticism about this practice as including these parameters in the model has usually been difficult to justify, suggesting that the model fit improves at the expense of theory (Hermida, 2015). For instance, by adding the correlation of two residuals in the model, researchers acknowledge “there exists a cause of both of the variables to which the residuals are attached but that is not specified in the model” (Landis, Edwards, & Cortina 2009, p. 17). It can be, thus, claimed that when relying on post hoc specification searches and allowing measurement errors to correlate, the scholars move away from the principles of the confirmatory analysis, to a more exploratory analysis (Hermida, 2015). In contrast, adding parameters in the model may be considered appropriate when correlations amongst measurement errors cannot be avoided, and they are theoretically meaningful (Landis et al. 2009; Byrne, Shavelson, & Muthén 1989). This can, for example, be the case when the indicator variables (i.e., items) share components, similar wording, or some theoretical grounds (Byrne et al. 1989). For example, in the case of the EWW scale, where a complex structure is present (five overarching well-being dimensions, and 12 distinct constructs in total; see Figure 1.1., p. 10), and items have similar wording, correlation residuals could be reasonably and justifiably included. The typical cut-off, when including correlation residuals is  $> .10$  (Kline, 2015).

### **3.4. Theoretical underpinning of the current research**

The current thesis is adopting a mixed methods approach. In particular, four different studies were designed to answer the research question, and precisely guide the scale



development: a systematic literature review (Chapter 2), a qualitative study employing semi-structured interviews (Chapter 4), and two cross-sectional studies (i.e., the pilot study in Chapter 6 and the main study in Chapter 7). According to Tashakkori and Teddlie (2010), mixed methods research can allow researchers to gain a greater insight into complex phenomena, something which would not be achieved by using a single method alone. The systematic review (Chapter 2) has established the theoretical grounding of the current study as, not only it provided a greater insight into the impact of remote e-working to well-being at work, but it also signified the relevance and meaningfulness of using a multi-dimensional approach to well-being. The interview findings (Chapter 4) will seek to understand the relationship between remote e-working and distinct elements of well-being, by both supporting literature review findings and filling existing theoretical gaps. The two cross-sectional studies (Chapter 6 and 7) will attempt to objectify these findings. The mixed methods used in this research suggests that there are “multiple realities”; which are better understood when balancing the constructive and relative character of qualitative studies and the reductionist and empirical character of quantitative ones (Johnson & Gray, 2010).

The PhD researcher also reflected on their epistemological position, on in other words the philosophical study of knowledge (Hersch, 2003). Epistemology is concerned with the “access to reality, knowledge, or truth, and how the truths of human reality are constituted” (Hersch, 2003, p. 69). According to Braun and Clarke, (2006), researchers’ epistemological position will affect and guide the conceptualisation of their projects, as well as the analysis and interpretation of their data. In our attempt to gain ‘real knowledge’ there are two main positions about the ‘locus of truth’: the objectivism and the subjectivism (Hersch 2003). As Hersch (2003) notes, objectivism is in favour of ‘scientific’ and ‘purely objective’ facts using measurable and empirical methods to find

solutions to our epistemological problems. In contrast, subjectivism suggests that the objective world is an illusion since individuals comprehend and define the truth using their projections and imaginings. What is problematic when following one of these two approaches according to Hersch (2003) is that both subjectivism and objectivism fail to consider “the inherently interactional relatedness of our Being-in-the-World” (p. 69). Mixed methods research, such as this one, appear to attempt to counterbalance this as it does not require a full acceptance that truth is purely objective, nor demands the rejection of objective truth completely.

A non-dualistic model, a more general epistemological model, is an alternative to the objectivist and subjectivist approaches (Hersch, 2003) and was adopted in the current research. Remote e-workers’ well-being, as well as their life and work experiences are influenced by their environment and the culture within the workplace, the knowledge they possess, their attitudes and experience (Charalampous, Grant, Tramontano, & Michailidis, 2018). Consequently, it is argued that remote e-workers’ well-being and working experience cannot be examined only subjectively in how attitudes or beliefs influence well-being and working experience, or only objectively, in that context and workplace culture influences well-being (Hersch, 2003). It is, thus, expected that the way well-being is experienced within remote e-workers will be influenced by both subjective and objective elements of individuals’ realities and will be different for each employee. Hence, adopting a non-dualistic epistemological approach when conducting this research seems to be very relevant.

Likewise to the non-dualistic Hersch’s (2003) epistemological model, ‘perspectivalist’ or ‘perspectival realism’ models have arisen (e.g., Giere 2010; Orange 1992). These models agree that reality is indeed not just subjective; however, it is apprehended differently depending on people’s perspective. Therefore, a perspectivalist

or perspectival realism epistemological approach is in line with the non-dualistic model, as it combines both the subjective and objective positions, taking into consideration human experience and the interaction with the world. The way that remote e-workers experience their particular way of working (e.g., working outside a traditional office environment) gives greater insight into reality. However, we need to consider that the reality is socially conceived, allowing for different perspectives to arise (Orange, 1995). This would mean that any changes in the context, workplace culture, and training that remote e-workers have (i.e., objective), can also change their attitudes, beliefs and behaviours (i.e., subjective). This then, reflects a bidirectional relationship; justifying a consideration of both objective and subjective solutions.

### **3.5. Ethical issues**

Ethical consent was granted to conduct each piece of this research. In particular, the University Ethics Committee approved the conduct of the qualitative study in April 2016, the pilot study in October 2017, the systematic review in June 2018, and the main study on March 2019 (see respective chapters for Certificates of Ethical Approval). All projects adhered to both the British Psychological Society's Code of Ethics and Conduct (2018) and the Health Professions Council Standards of conduct, performance and ethics (HPC 2016). Greater detail about ethical issues concerned with each independent study will be provided and discussed in Chapter 4, Chapter 6 and Chapter 7, when studies are presented individually. In cases where participants were recruited participant information sheets, consent forms, and debriefing statements were used. Lastly, gatekeeper letters of consent were also used for organisations that were approached to participate. Each chapter provides more information about the specific documents used, for each study.

### **3.6. Summary**

This chapter has elaborated on the overall methodological framework adopted in the present thesis. The key steps in the scale development process, as proposed by the classical approach, were presented and discussed in detail. The pivotal role of reliability and validity were also considered, as well as the main types of factor analysis. The next chapter will be presenting a systematic review of the literature, which is fundamental in defining the concept of well-being at work, and how it is affected by remote e-working practices. This commences the first step of the E-Work Well-being scale development.

## **Chapter 4: “It needs to be the right blend”: A qualitative exploration of remote e-workers’ experience and well-being at work**

### **4.1. Overview**

This Chapter presents the findings of a qualitative study exploring the remote e-working experience, by focusing on its impact on well-being at work. In particular, 40 e-workers from a British IT company were interviewed about their work-related well-being. Work-related well-being was framed within that theoretical model of Van Horn et al. (2004) and five distinct well-being dimensions, and affective, the professional, the social, the cognitive, and the psychosomatic were explored during the interviews (as described in systematic literature review, in Chapter 2). The purpose of this study was threefold: (i) to support and inform the item development of the newly devised E-Work Well-being (EWW) scale, (ii) to examine the relevance of Van Horn et al. (2004) well-being model for remote –workers’ well-being, and (iii) offer an opportunity to understand more in-depth some dimensions included in the theoretical model, but empirically overlooked. Particularly, there is limited previous evidence indicating how remote e-working can influence cognitive weariness levels (and switching-off from work), psychosomatic conditions, and health-related behaviours. Interview data were analysed using thematic analysis, where key themes emerged and were analysed (Braun & Clarke, 2006).

### **4.2. Introduction**

The findings from the systematic review (see Chapter 2) seemed to suggest that when examining the relationship between remote e-working and well-being at work, a multi-dimensional approach would be appropriate since it allows for greater understanding of the inter-connectedness between relevant well-being dimensions (Charalampous et al. 2018). This may, consequently, better explain the impact that remote e-working has on overall well-being. The influence of remote e-working on an individuals’ well-being was

supported to be multi-faceted and complex, especially when considering all the different spheres of individuals' lives that could be affected (Allen et al 2015; Charalampous et al. 2018; Gajendran et al. 2007). Van Horn et al. (2004) five-dimensional model and its encompassed sub-dimensions that was successfully used as a frame to revise the literature in Chapter 2, is now used in the present qualitative study. This model provides the theoretical context whereby the relationship between remote e-working and well-being at work was explored (see Figure 1.1., p. 10). Hence, the affective, cognitive, social, professional, and psychosomatic components of well-being are researched.

#### **4.3. The benefits of using a qualitative approach.**

Employing a qualitative design at this stage of the research would be relevant, as it will provide a rich source of information, supporting the item development for the new EWW scale (DeVellis, 2016). This will support evidence for scale's face and content validity.

Sparrow (2000), in his work on the changing nature of work suggests that qualitative research might be more sensitive than quantitative designs when capturing changes in individuals' perceptions and cognitions on the impact that work location has on their work outcomes. Sparrow (2000) suggested that if "survey questions had been asked more sensitively, or if qualitative data had been gathered, more significant changes would have been detected" (p. 204). This is because individuals may get accustomed to the changing nature of their jobs and, consequently, report a lessened impact of their work location on their work arrangements and outcomes (Sparrow, 2000). Similarly, Morganson et al. (2010) proposed that researchers should conduct more qualitative studies and investigate in greater depth how remote e-workers' primary work location may have an impact on their work perceptions and attitudes. This is in line with the proposition made in Chapter 2, that qualitative data could enable us to delve into and identify possible moderating and mediating factors between well-established relationships (e.g., affectivity linked to

remote e-working). It is worth mentioning, that Grant et al. (2013) have already completed a qualitative study to develop a previous remote e-working scale (i.e., E-Work Life scale; Grant et al., 2011), which suggested that qualitative data can enrich and facilitate item development.

#### **4.4. Gaps in our knowledge.**

The current qualitative study can also extend and contribute to our current knowledge on the topic, filling existing gaps. Regardless of the extensive amount of existing literature within remote e-workers; findings are primarily concerning homeworkers (Charalampous et al. 2018). However, the nature of work keeps changing and individuals now work not only from home, but also from a variety of locations such as cafes, trains, hotels, and customer sites (Maitland & Thomson, 2014). The amount of time individuals spend working in this way varies, now commonly referred to as ‘agile working’ (e.g., Bentley et al., 2016). Morgan (2004) proposed that a successful agile organisation is defined as one which not only provides employees with sufficient flexibility, but also manages the remote e-working arrangement, in order to maximize employee performance and productivity. A common limitation to remote e-working literature is that researchers do not always clearly state the primary work location (e.g., Bailey & Kurland, 2002), and in cases where they do, the specific amount of hours per week spent in deferring locations is not clarified (e.g., Morganson et al., 2010). The amount of hours spent working in each one of these locations is likely to attenuate or strengthen the relationship between individuals’ work location and organisational outcomes. Thus, the current qualitative study targeted employees who are location independent and adhered to differing work practices (e.g., working full time from home, or conducting work in a variety of places).

As extensively discussed in Chapter 2, there is a gap in our knowledge to the extent to which remote e-working is impacting upon specific well-being dimensions.

Particularly, recent research has dismissed individuals' psychosomatic conditions, or in other words physical health, and how they can be affected by using remote workstations (Ellison, 2012; Eurofound and the ILO, 2017). Moreover, the health-related behaviours (e.g., sedentary behaviours, exercise and eating) which can have a detrimental impact on physical health have not been examined (Allen et al., 2015). Studies within general working populations suggested that prolonged sedentary behaviour was found to be associated with many health risks including, but not limited to, coronary heart disease and myocardial infarction (Morris, Heady, Raffle, Roberts, & Parks, 1953; Petersen et al., 2014), with bone health in youth (Chastin, Mandrichenko, & Skelton, 2014), with mortality, weight gain, and obesity (Thorp, Owen, Neuhaus, & Dunstan, 2011). Physical activity during leisure time might not be enough to prevent health risks linked to a sedentary life, such as overweight, obesity, and chronic disease (Owen, Bauman, & Brown, 2009). However, being physically active was supported to improve employees' health outcomes, work culture, reducing their job stress levels (Conn et al., 2009). Overall, previous research has suggested that the combination of sitting for long periods, not adequately exercising, and maintaining a healthy diet might have a detrimental impact to individuals' health (Healy et al., 2012). Hence, this qualitative research aims to provide a greater insight into unexplored and potentially different associations between remote e-working and individuals' physical health; clarifying how health-related behaviours are affected. For instance, are individuals benefiting from the flexibility linked to remote e-working, using this time to sit less, exercise more, and eat better? Or, do individuals end up neglecting themselves and engage in more sedentary behaviours because of limited opportunities to socialise and move around in their work environment?

It is still equivocal whether individuals experience more or less cognitive weariness when e-working remotely. Past research has not provided a clear answer as to



whether remote e-workers become cognitively weary by concentrating less, finding it hard to take new information especially due to overworking and using technology (Charalampous et al. 2018). Individuals have suggested that working away from the office, and particularly when working to a home location, helped them to concentrate more and get demanding tasks done (Boell et al., 2016). Nevertheless, the evidence is scarce. Contrasting empirical evidence suggests that the ICTs use when e-working remotely, and specifically the large volume of emails and instant messages, may induce many interruptions (Leonardi et al., 2010), which can then affect levels of cognitive weariness and concentration. Switching-off from work could also play a fundamental role to the extent that individuals may feel weary. Particularly, the fact that remote e-workers may be more susceptible to blurred boundaries between work and home life (Grant et al., 2013), can then lead to work mentally predominating during time spent for leisure, reducing time for unwinding from work (Cropley & Millward, 2009). This study allows greater exploration into the impact that remote e-working may have on cognitive weariness levels (i.e., concentration and taking in new information), investigating possible contributing factors such as unwinding and switching-off from work.

Hence, the present study is seeking to provide a more holistic and in-depth interpretation of how remote e-working may have an impact on individuals' well-being at work. Especially after supporting the theoretical relevance of Van Horn et al.'s (2004) model when exploring the relationship between remote e-working and well-being at work (i.e., Chapter 2), this study poses the following overarching research question:

*How does remote e-working affect individuals' work related well-being in its distinct five dimensions: psychosomatic, cognitive, affective, social and professional?*

#### **4.5. Method**

Qualitative research has been mostly known as a method which can provide us with rich and deep but simultaneously subjective and soft data (Bryman 2017). Denzin and Lincoln (2000) claimed that qualitative research rejects positivism's principles according to which the reality is absolutely represented by our collected data, but instead it recommends that language may just be a window, which allows us to look onto reality. These researchers also suggested that there are some key defining characteristics of qualitative research to support scale development. Whereas quantitative research predominantly focuses on comparing the individuals, qualitative research considers each individual's perspective, allowing researchers to define underlying mechanisms, which may explain and interpret individuals' experience. This richness of data is fundamental to support the development of the initial pool of items for the EWW scale, as we are not seeking to just endorse sufficiently predetermined theoretical notions and constructs, but we are looking to find specific characteristics of the current constructs within a targeted population, such as remote e-workers (Bryman 2017). Quantitative approaches will be employed later to test the factorial structure the EWW scale (see Chapter 6 and Chapter 7).

With a qualitative research approach, and in this case thematic analysis, the context of data becomes apparent (Vaismoradi, Turunen, & Bondas, 2013). By understanding the context within which the data is collected, a greater insight is gained into how individuals' stories are affected by their surroundings and working environment (Downe-Wamboldt, 1992). Therefore, the analysis of meaning is combined within the context of e-working (Loffe & Yardley, 2004), providing a more significant and in-depth interpretation of our findings. This is an advantage of using thematic analysis over content analysis, as in content analysis researchers may focus on counting and the frequency of codes to interpret their findings, removing meaning from study's context (Morgan, 1993).

Previous qualitative literature within remote e-workers discussed the importance of acknowledging the research context. For instance, in a previous qualitative research by Tietze and Nadin (2011) it was suggested that individuals were happier when working from home. Nevertheless, when looking deeper into the data, the individuals' satisfaction derived from escaping a 'hostile', 'hateful' environment which was 'causing immense stress and frustration' (Tietze & Nadin, 2011, p. 321). In contrast to this, a supportive organisational culture was suggested to improve remote e-workers' outcomes (Gálvez et al., 2011). Hence, the research context for this research is briefly outlined below.

#### **4.5.1. The research context**

For anonymity purposes, the studied organisation is given the pseudonym Novus. Novus is a market leading software development organisation which supports customers in software applications, business process outsourcing, and technology solutions. The company employs more than 4,500 individuals, serving more than 1,000 customers. The organisation has substantially grown in the last 30 years, becoming an international business. With their supply chains being predominantly based across the United Kingdom (U.K.), they are an international organisation with clients across the world. Novus serves a variety of sectors including, but not limited to, the U.K. government and national security, local and regional government, public safety, education, social housing, health and care, commercial and utilities telecoms financial and legal services. Due to a growth in demand for flexible working and the need to retain talented employees, Novus have embraced and encouraged an 'Agile working' policy. According to this policy, employees can have different working arrangements depending on their preferences. This policy meets business needs, for instance, Novus employees can work from home or any other location having a more flexible time schedule. The idea is to use advanced technology as a means to positively transform the way that employees work, making it easier for them

to meet their personal and working demands. In other words, “work is brought to the workers, rather than bringing workers to work” (Nilles, 2007, p. 1). Greater insight into the organisational context is provided in the Results section.

#### **4.5.2. Data collection**

There was an established collaboration between the researcher and the current organisation, therefore, data collection was supported and facilitated by the Human Resources (HR) Department. The HR Department reached out to participants and advertised the project, through their intranet. The study was appealing to individuals, with 41 remote e-workers expressing interest. Prior to the interview, all participants were given a Participant Information Sheet providing the purposes of the research project and how this could be beneficial not only for research purposes but also for improving their company’s remote e-working practices. It is worth mentioning that employees were reassured that their data would be treated with confidentiality. Regardless of the collaborative nature of the project with their company, individuals were informed that the company would receive general findings instead of individual responses. It was, thus, made clear to all participants that the research team would safeguard their anonymity when sharing findings with the company. When all the information was conveyed, interviewees were asked for their verbal and writing consent to participate and their interviews to be audio recorded. Most of the interviews were conducted in person, with only a few of them conducted via phone. By the end of the interview, employees were encouraged to ask any questions regarding the interview, and they were debriefed by discussing the aim of the study. Even though employees were not aware of any monetary inducements, by the end of all interviews, they were posted a thank-you message, both from the researcher and the company and they were given £10 Amazon vouchers (see Appendix E for the ethics certificate and accompanying documents).

In accordance with a qualitative approach, a semi-structured interview format was used to collect the data. The final version of the interview was piloted on one remote e-worker, outside the organisation, and based on his feedback targeted changes were made, both on the structure and phrasing of some questions. Trialling interviews was suggested to be a recommended practice by Howitt (2016) as it may enhance skills of the interviewer and identify any inadequacies with the interview guide.

The semi-structured interview consisted of open-ended exploratory questions on remote e-workers' experiences. Interviewees had to answer to three types of questions: demographic, work-related, and remote e-working related (see Appendix F for the interview protocol). During the initial questions, the researcher aimed at establishing rapport with the interviewee, as well as getting a greater understanding into their current job responsibilities within the organisation. For example, they were asked to expand on their role, their responsibilities and what does their e-working practice looked like. Since discussing about well-being might involve sharing sensitive information about interviewees' working and personal lives, 'softer' questions helped to introduce interviewees to the topic. This also enabled creating a friendly environment where interviewees felt comfortable to share their own experiences. Subsequent questions focused on their remote e-working experience and how this influenced, if at all, their well-being at work. The questions were designed to elicit information about each one of the five well-being dimensions declared by Van Horn et al.'s (2004) model of well-being at work; which is the model underlying the development of the E-Work Well-being scale. For example, when it comes to the affective dimension, individuals were asked to expand on the extent to which e-working remotely had an impact on their emotions, their satisfaction and commitment levels, as well as the degree to which they felt emotionally exhausted. It is noteworthy though, that the researcher used prompt questions throughout,

encouraging participants to elaborate on any interesting claims they made. For instance, participants were asked to give examples, and expand on the reason why remote e-working impacted them in this way.

During the interviews, in accordance to Howitt's (2016) recommendations about essential techniques when conducting qualitative research, the researcher engaged in active listening, used appropriate probes to clarify and gain some examples when needed, empathised and paraphrased interviewees' descriptions and used silence effectively. Interviews ranged from 60 to 90 minutes and they were audio-recorded and later transcribed verbatim.

#### **4.5.3. Ethical considerations**

The current study was reviewed by the Coventry University Ethics Committee and it was given an approving ethical opinion for conduct. Participants' contribution to the study was voluntary and they were informed for their right to withdraw at any given time they wanted. This project was funded by the SPIDER Fund, available at Coventry University, but there were no other commercial sources and no financial interest in the outcome of the research. In addition, the researcher worked independently of Novus, following the guidance provided by University ethics protocols. Therefore, regardless of the organisation being informed about the topics covered in the interviews, no restrictions were imposed to the questions.

#### **4.5.4. Participants**

For this study 40 individuals were interviewed, all from Novus, including 38 across the U.K., and 2 from an Australian site. It is worth noting that the data from one interview was excluded as the quality of the recording was not good. There was a good representation of male ( $N = 23$ ) and female participants ( $N = 17$ ) with a *Mean age* of 46.86 ( $SD = 8.43$ ). On average they have been working in Novus for 8.61 years (ranging

from 2 months to 30 years), having an overall e-working experience of 10.6 years. Individuals claimed that they did work extra hours, which was on average 9.18 hours a week (ranging from 0 hours to 25 hours extra). They covered a range of roles within the organisation with 42,5% of them having managerial responsibility. Table 4.1. provides greater detail concerning the demographics of the recruited sample. Their working pattern and how they split their working days in office, home, and client sites location is also presented. The interviewees reference code (i.e., P1-P40) is provided for each quotation presented in the results section.

#### **4.5.5. Data analysis**

The qualitative data gained by the semi-structured in-depth interviews was analysed conducting thematic analysis, which is a widely used qualitative method within psychology, known for its flexibility (King, 2004). According to thematic analysis patterns (i.e., themes) within the data are acknowledged, analysed, and described (Braun & Clarke, 2006). The six phases of thematic analysis, as outlined by Braun and Clarke (2006) were: (a) *familiarising with the data*, which is achieved by transcribing and reading the data; (b) *coding* which refers to creating labels for the main semantic and conceptual content of individuals' narratives; (c) *search for themes*, where codes are grouped together to provide meaningful patterns of the data; (d) *reviewing the themes*, where the themes are checked to ensure that themes fully capture and tell a convincing story about the data; (e) *name the themes* and (f) *writing up*.

Since interview questions were based on previous research and there was a declared intention to search for specific impact in each one of work-related well-being dimensions, thematic analysis was used predominantly in a deductive and theoretical (top-down) way. In other words, specific predetermined themes were explored (Coolican, 2014). Thus, information was elicited about each individual well-being dimension

proposed in Van Horn et al.'s (2004) model (i.e., affective, cognitive, social, professional, and psychosomatic), as well as for health-related behaviours (such as eating and exercise habits). Consequently, some of the themes developed were driven by and reflected the five aforementioned components of well-being as suggested by Van Horn et al. (2004). An example of a theme which was created using the deductive approach is Theme 7 which concerns the social dimension: "Social isolation and maintaining relationships". Nevertheless, in cases where novel and interesting themes were raised, an inductive and data-driven approach was also employed where findings strongly linked to the transcripts (Boyatzis, 1998). In cases where an inducting approach was adopted to develop themes (and sub-themes), contributing factors to the relationship between remote e-working and well-being at work were revealed. These data-driven themes were not necessarily new dimensions to well-being at work, but they offered a greater insight into why remote e-workers' well-being could suffer or improve. An example would be the Sub-theme: 'Personality and relationship building' that discussed the ways in which individuals' personality has an impact on their experience of their social relationships. Braun and Clarke (2006) suggest that both approaches are valid and appropriate when conducting thematic analysis. In line with the present study, scholars have successfully and effectively used a hybrid process, where both inductive and deductive thematic analysis was performed when interpreting interview data (see Fereday & Muir-Cochrane, 2006 for an example). Both the theory-driven, and data-driven themes facilitated a deeper understanding of the topic, informing the data analysis.



Table 4.1.

*Demographics for the interviewed participants.*

Participant (Gender)	Contract	Job Role	Manager	Working pattern, work location (per week)
P1 (F)	Part-time	Content removed on data protection grounds	No	2 days a week working in the office, 3 days working at home.
P2 (F)	Full-time		Yes	2 days working from home, visit company sites 3 days a week.
P3 (M)	Full-time		Yes	2-3 working from home, 2-3 travelling to customers sites and occasionally to company site.
P4 (M)	Full-time		No	3 days working from home and travelling, 2 days work from the office .
P5 (M)	Full-time		No	Full time working from home.
P6 (F)	Full-time		Yes	Two days working from home, 3 days travelling to different sites.
P7(M)	Full-time		No	One day in the office, maybe two days with the customer, two days at home.
P8 (M)	Full-time		No	4 days work from home, 1 day per week work in a company site
P9 (M)	Full-time		No	Full time working from home.
P10 (M)	Full-time		Yes	2-3 days at home, 2 days at company sites.
P11(M)	Full-time		No	Full time working from home.
P12 (M)	Full-time		Yes	1-2 days per week at home, 1 day in the main office, 2-3 days per week customers.
P13 (F)	Full-time		No	2 days at home, 3 days different company sites.
P14 (F)	Full-time		Yes	1-2 work from home, 2-3 company sites.
P15 (M)	Full-time		Yes	90% of his time working from home, 10% office sites and customer sites.
P16 (M)	Full-time		Yes	1 day at home, 4 days travelling to different offices, working in hotels and trains.
P17 (M)	Full-time		No	Full time working from home.
P18 (M)	Full-time		Yes	2 days from home, 3 days at a company site, working in hotels.
Continued				

P19 (F)	Full-time	No	Full time at home, only occasionally travels at a company site.
P20 (M)	Full-time	No	2-3 days at home, the rest with customers, once at a company site.
P21 (M)	Full-time	Yes	2 days at home, two days in the office, two days on the road.
P22 (F)	Full-time	No	2 days working from home, 2 days spending time with customers, 1 day working in a company office.
P23 (M)	Full-time	Yes	1 working from home, 4 days travelling in different sites.
P24 (F)	Full-time	Yes	2 days at home, 3 days working at company sites.
P25 (F)	Full-time	No	3-4 days at home, 1-2 at a client site.
P26 (F)	Full-time	Yes	4-5 days working from home, occasionally travelling to company sites.
P27 (F)	Part-time	Yes	4-5 days working from home, occasionally travelling to company sites.
P28 (F)	Full-time	No	2-3 days working from home, 2-3 days in a customer office, 1 in a month to a company site.
P29 (F)	Full-time	Yes	Full time home based, often works from a different company site.
P30 (F)	Full-time	No	4 days work from home, 1 day in an office or 1 day hearing in the court.
P31 (M)	Full-time	Yes	1 day at home or customer site, 4 days in a company site.
P32 (M)	Full-time	No	2 days working from home, 3 days work from an office.
P33 (M)	Full-time	No	3 days working from home, 2 days working in the office.
P34 (F)	Full-time	No	Home, customer, office – depends on the week and how much customer work is going on.
P35 (M)	Full-time	Yes	1-2 days at home, 3-4 various different sites.
P36 (F)	Full-time	No	Full time at home.
P37 (M)	Full-time	No	2 days from home, 3 days doing training at schools.
P38 (M)	Full-time	No	Mostly working from home, occasionally works in clients sites, rarely visits company offices.
P39 (M)	Full-time	No	2-3 day at home, 2-3 days working at customer sites.
P40 (F)	Full-time	No	Full time at home (occasionally visits customers).

The NVivo software was used to assist the data analysis process, as it allowed for the grouping of identified codes, systematising the coding process. The resulting themes and sub-themes are presented in Table 4.2. below. Interviewees' direct quotes are also presented throughout the analysis, to represent and illustrate suggested themes. These quotes can demonstrate and confirm that findings have directly arisen and are deeply embedded in participants' words and narratives (Whittemore, Chase, & Mandle, 2001). It is worth noting that an external researcher independently coded a sample of five transcripts, and compared them with PhD researcher's coding, to ensure that coding reflected the context of the data. Concordance in the themes and their relevance were also discussed and agreed between the PhD researcher and this external researcher.

#### **4.6. Results**

Individuals were first encouraged to describe their remote e-working experience, and what it looked like for them. There was a very good variety in regards to the way and locations that people worked. About, 13 interviewees were full time working from home, visiting the office or customers sites occasionally; 10 of them had an almost equal split to working from home and office locations; 8 of them split their time between office, home and customer locations; 6 of them split their time between home and customer sites; and lastly 3 of them worked only a day from home, and the rest of their time in either home or customer locations. Table 4.1. provides a clear breakdown of people' weekly split. The main location that individuals' work took place (e.g., home, customer sites, a combination of locations) along with how they split their time (e.g., full time working from home) will be acknowledged throughout the results section as it can, in some cases, explain why individuals experience their remote e-working in the way they do.

Table 4.2.

*Themes and sub/themes of the analysis*


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<b>Theme 1:</b>	Benefits and challenges facing remote e-workers.
<i>Sub-theme</i>	Flexibility and smoother work-life interference
<i>Sub-theme</i>	Commuting/travelling
<i>Sub-theme</i>	Email use
<b>Theme 2:</b>	Psychosomatic symptoms.
<i>Sub-theme</i>	Sedentary behaviours combined with the absence of breaks.
<i>Sub-theme</i>	Long hours VS routine.
<i>Sub-theme</i>	Ergonomics and driving
<b>Theme 3:</b>	Developing healthy habits
<i>Sub-theme</i>	Exercise and Diet
<i>Sub-theme</i>	Preventative factors in developing healthy habits
<b>Theme 4:</b>	Impact on cognitive weariness.
<b>Theme 5:</b>	Experiencing switching-off from work
<i>Sub-theme</i>	Enablers to switching-off from work
	Obstacles to switching-off from work
<b>Theme 6:</b>	Emotional well-being.
<i>Sub-theme</i>	Positive emotions experienced
<i>Sub-theme</i>	Negative emotions experienced.
<b>Theme 7:</b>	Social isolation and maintaining relationships.
<i>Sub-theme</i>	Personality and relationship building
<b>Theme 8:</b>	Impact on professional well-being.
<i>Sub-theme</i>	Career development/progression
<i>Sub-theme</i>	Autonomy
<i>Sub-theme</i>	A competent and effective remote e-worker.

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It is also worth noting that in some cases individuals' experiences and opinions varied across the sample. Although quantifying the results is not a principal aim of this study, considering its qualitative nature, an indication is provided throughout as to how many individuals agreed with some propositions made. Therefore, it is acknowledged when there was no consensus within participants. In addition, there were no gender

patterns identified within the sample, with both female and male participants sharing similar experiences when e-working remotely.

Before outlining and presenting the key themes identified from the results, of this study, it is worth mentioning that the impression about Novus, as a whole, was very positive. From an internal perspective, Novus was suggested as a great place to work by interviewees, who extensively referred to a very supportive working environment. As extensively discussed in the Results section, Novus remote e-workers seemed to be very satisfied, committed and engaged with their organisation. Very positive feedback was given regarding their job, their colleagues, and supervisors; as well as the support and understanding individuals got from the company. As it was characteristically claimed:

*“They [Novus] make a fairly good use of the benefit of remote e-working. People I deal with within Novus are very good at managing remote workers and so on and I think personally it's got a lot of benefits to offer, both to the employee and the company.” P9*

*“There's a real supportive culture that if you gave 100% to the company they will really support you. I think...I honestly think, this company is unique because I've worked for a lot of IT companies and I've never worked in an environment where I've had the support of the senior management team that I have here.” P14*

This positive impression was also supported from an external perspective, as the organisation seemed to value employees' opinions, seeking for their feedback when checking existing practices and their effectiveness. Consequently, the HR department encouraged employees to participate in the study, facilitating the project's completion. At the cease of this project, the organisation invited the researcher to present and discuss the finding of the study with existing managers and individuals in leading positions within the organisation. Managers engaged in a conversation around the study's findings, asked clarifying questions and shared their own opinions and experiences on the topic.

#### **4.6.1. Theme 1: Benefits and challenges facing remote e-workers.**

The interview data analysis provided an overall review of the remote e-working experience, outlining both its benefits and challenges. Interviewees agreed on the existence of several advantages of being a remote e-worker.

##### **4.6.1.1. Sub-theme: Flexibility and smoother work-life interference**

The most cited one was the flexibility around individuals' work. This flexibility was primarily reflected in individuals' location of work. Individuals really appreciated that they were able to choose whether to work from a home or an office location, which is clearly illustrated below:

*"If I ever look for another role that home working bit would be a key benefit. It's not the money, it's the flexibility and that's important. That's more important to me and that's what makes Novus attractive in that respect." P27*

Interviewees mentioned how much they valued that they could choose '*the right place, to do the right thing*' (P11). They shared the idea that the office becomes a place where individuals mainly interact and socialise, whilst home gives individuals the 'headspace' they need to complete tasks which require high levels of concentration. It is worth noting though, that this finding concerned the participants who split their working hours between a home and an office location.

The flexibility provided by remote e-working helped individuals to better juggle their personal and working lives, enabling smoother work-life interference. This, in many cases, translated as individuals' ability to meet family demands, do the childcare, and spend quality time with their loved ones. As Participant 15 discussed:

*"When my daughter...if something happens at school and I have to go pick up my daughter... say she's ill because one of the advantages of the flexible way that we work and the long hours we work is that if I have an emergency... I can say to my director 'Look, I need to take half a day and I'll make it up. Either I'll make it up tomorrow morning or I'll make it up another time'. So to me that is an advantage..."*

Beyond family commitments, individuals' personal lives benefited as a whole. A number of interviewees noted that they could deliberately stop work earlier, spend some time exercising (such as going to the gym) and finish off later in the afternoon. The variety that comes with remote e-working is what this sample of individuals enjoyed, as they were not '*stuck in their desk*' (P6) all day long. In addition, the flexibility that comes with remote e-working, the "any time-any place" nature of their job, as well as the smoother work-life interference were fundamental reasons, which explained why remote e-workers were satisfied and committed to their organisation.

*"It can... it certainly increases job satisfaction to be able to work from home. And potentially you can utilise your time more efficiently. Even do the same the length of time devoted to work without the travel time which makes two hours' worth of available time." P21*

Notwithstanding, the impact on work-life balance being suggested as positive by some of the interviewees, it was still referred as being indeed negative for others. Individuals claimed that it was very easy to blur the boundaries between their working and personal lives since their work was always present. The proposition of both pros and cons of remote e-working and the indicated dual impact of blurred boundaries, signifies that one size might not fit all. This is also illustrated in the fact that individuals used different coping mechanisms (e.g., integrating or separating their personal and working spheres (see Theme 5 for additional expansion).

#### **4.6.1.2. Sub-theme: Commuting/travelling**

Also, for people who travelled a lot, working from home allowed recovery and people were able to relax. From these interviewees' narratives, relaxation referred to more of a physical rest, where individuals could save commuting for the day and boost their energy levels, which was enormously appreciated in their fast-paced jobs. According to an interviewee:

*“Being able to then take time back and work from home and have peace and quiet gives me sanity, that I’m not knackered, otherwise I’d spend 5 days a week on the road and I’d be...I would not enjoy it” P14*

Remote e-working also allowed individuals to avoid commuting when traffic was very bad, or when they felt that they were not in the right state to drive to work. Particularly, Participant 22 stated that being able to determine when going to go to an office and when not to go was much ‘healthier’ and made her felt ‘empowered and confident’ that she was doing the right thing, looking after herself in general and herself in the job.

#### **4.6.1.4. Sub-theme: Email use.**

A key drawback identified was the extensive amount of emails remote e-workers received. Some of the interviewees suggested that although being the most commonly used communication medium, email was not always the most efficient way of contacting people and resolving issues that may arise. For example, they talked about the effectiveness of just ringing people instead of ‘firing off’ an email at them. Remote e-working could lead people into the trap of just emailing, which was not always the quickest way to solve the occurring issue. The following sections expand more on the best way to use technology, and its impact on cognitive weariness and social relationships.

#### **4.6.2. Theme 2: Psychosomatic symptoms.**

In this theme, the impact that remote e-working had on individuals’ psychosomatic health was explored. None of the employees reported serious and exasperated health conditions as a result of remote e-working. However, a few individuals outlined psychosomatic irritations, such as their body becoming very stiff, pains in their shoulder, in the lower limbs (e.g., feet, thighs and hips), in the upper body (e.g., forearms and elbows), in their neck and back, as well in their wrists and fingers. Some of participants also mentioned that their joints felt sore, that they had discomfort in the eyes and had headaches and or migraines, especially when working for many hours in front of the computer screen.



Interview data revealed that there were some contributing factors to the irritation of psychosomatic health.

#### **4.6.2. Sub-theme: Sedentary behaviours combined with the absence of breaks.**

The increased sedentary behaviours combined with the absence of breaks was one of the prominent contributing factors associated with psychosomatic health.

*“I’ve had problems in the past with back ache, which I put down eventually to the fact that I was sitting down for long periods all day.” P9*

Interviewees expanded on how sedentary behaviours can be an integral part to this particular type of working, which may, in turn, exasperate employees’ physical health. The impact of this sedentary lifestyle could get worse when individuals did not take breaks, suggesting an inextricable link between sedentary behaviours and lack of breaks when exploring psychosomatic health. One of the main reasons why sedentary behaviours increased within remote e-workers, becoming especially problematic, was the fact that individuals get to lose the social cues from colleagues, which would normally encourage them to have a break, walk, and spend time away from the screen. Most interviewees suggested that working in an office and its embedded socialising aspect might lead to more frequent breaks, as compared to when working from home, or away from the office. This can, then, decrease sedentary behaviours throughout the day, which is very important for individuals’ health. Therefore, remote e-workers may end up having breaks less regularly, often skipping lunch or having a working lunch at the desk. Several interviewees found it very easy to become too focused and absorbed with work:

*“Because you’re at home, you could be working all weekends and things like that. So you’ve got to be quite self-controlled I think, and know when to stop.” P14*

*“I make sure after a couple of hours... that I take a break away from my screen because, it’s really easy when you’re at home to just sit there all day and, you know, you have to be conscious of taking a break...” P11*

Not taking breaks, combined with a sedentary lifestyle, was something that was linked to tiredness, fatigue, back-shoulder pain and eyes problems, which in some cases impacted sleep. Irrespective of that working away from an office could provide a “*conducive*” with “*fewer distractions environment*” (P6) which could benefit employees’ concentration, individuals appreciated the importance of reducing sedentary behaviours. Therefore, they consciously tried to increase breaks throughout their day. For example, two of them suggested taking their pets for a walk, as well as two others mentioned setting reminders to ensure they take breaks:

*“I tend to use things like a calendar on a mobile phone, just to remind me to do really simple things like go and have lunch, because I don't get the sort of prompts from everybody else in the office going off to have lunch. Because I am the only person here, you can find if you don't do something like set a calendar alarm for 1 o'clock every day, then you get sort of 3 o'clock in the afternoon you think, I'm starving hungry, why am I hungry? Oh yes, it's because I haven't had lunch” P9*

#### **4.6.2. Sub-theme: Long hours VS routine.**

Similarly to breaks, working long hours was suggested to be a trap that individuals easily fell into when e-working remotely, increasing sedentary behaviours. Reasons for doing so included, but were not limited to, checking emails more frequently due to smart phones, the equipment being set up and ready at home, and having more hours to spare by not having to commute, and travel to and from work/customer sites:

*“Time comes into that, so I do, I do tend to work more hours when I'm homeworking [...] if I decide to come back and do some work, I just have to walk through my desk and everything is still there, all of the documents that I'm working on now are still open. I'm connected to the systems still, and so, as soon as I sit down in my desk again, which might be maybe when the baby went to bed later in the evening, from the moment that I sit down, I'm instantly productive because I'm looking at the same document that I walked away from a few hours earlier” P23*

Nevertheless, it is noteworthy that long hours was not an issue for remote e-workers who sought routine in their working day, as these individuals tried to stick to a routine by starting and finishing in the same manner as they would do in an office environment.

#### **4.6.2. Sub-theme: Ergonomics and driving.**

The ergonomics of the work station has been raised as a critical element to remote e-workers psychosomatic health. It was claimed that having an appropriate desk and chair could reduce musculoskeletal irritations, such as back and neck ache. However, there was mixed experience as to whether individuals' remote workspace is assessed, with some remote e-workers suggesting that their workspace was checked when they started working remotely from home, and others suggesting that no one has ever looked into that matter.

*"Yes and no. Some and some. I don't sit properly and I don't cos I work off different devices and I don't plug into a screen always so yes I probably slump and I shouldn't" P27*

All the employees travelling a lot, suggested that driving can take its toll on the body. They explicitly said that *"you can feel stiffed in a car"*P16 and they appreciated the days working from home as a good opportunity for them to physically rest.

*"I mean you know when I am travelling so much firstly, no matter how comfortable your car is if you are sitting in a car for 3 hours straight that does affect your posture, that affects your back a little bit, your confined to the seat so much as when you're in an office, or a home, you will get up frequently so, you know, that is always there."P34*

In general, although only some of the interviewees expanded upon musculoskeletal pains and fatigue, these are still worth considering. Individuals did not directly blame remote e-working for any of their psychosomatic health, but they did pinpoint some of the threats of this way of working to individuals' physical health conditions. In particular, sedentary behaviours, not taking breaks, working longer hours, faulty ergonomics, and extensive driving seem all to be risks involved in remote e-working.

#### **4.6.3. Theme 3: Developing healthy habits.**

Similarly to the impact that remote e-working had on work-family balance, also in relation to health and lifestyle, two opposite effects are reported. Regardless of the risks described above relating to the danger of not having enough breaks, and not choosing the

most appropriate ergonomics, interviewees did link this way of working with healthier habits. It is worth noting that the risks presented above were proposed to be potential hazards, which in many cases individuals overcame, whereas the healthier lifestyle presented below, seemed to be the case for most of the remote e-workers.

#### **4.6.3.1. Sub-theme: Exercise and Diet**

Remote e-workers reported that fitting more exercising in becomes easier, as their hours flex which meant that they could take breaks during their working hours, especially during lunchtime (e.g., to go out for a walk, or go to the gym). What also seemed to enable physical activity was the reduced time spent commuting.

*“I’ve definitely become more active, definitely because when I was working in the office, you know, by the time you’ve got to work, got home again, especially in the winter and it’s dark you don’t want to do anything but actually since I started working from home I started to run, so I started going for a run on my lunch break or after work because I could finish and already be at home and just go” P11*

*“Em, when I am remote working, so for example I’ll get up early, normally I’m working by you know sort of 7 o’clock ish and then I will pop out during the day to go to the gym or you know for example, all my staff know on Friday between 3 and 4 I’m not available because I have a personal training session at the gym em you know, so yeah I do take a lot of time out to do things, [...]it just depends on what suits me really “ P12*

This excludes participants who spent an extensive amount of time travelling (check the working pattern/work location per week in Table 4.1. for additional details).

It was also evident that the majority of remote e-workers were able to have a healthier diet when working remotely from home. They reported that this was due to having the facilities to be healthier at home, more control, and eating better quality food.

*“I kind of record what I eat as well on an app because I don’t want to have, you know, be eating constantly all day, it’s quite easily to eat loads, yeah because I’ve lost two stone I think since I’ve started home working because I’ve been able to ...you can control very well what you eat so it’s been good for me in that way” P5*

Therefore, having a choice over what to eat was a main factor in improving individuals' diet.

#### **4.6.3.2. Sub-theme: Preventative factors in developing healthy habits.**

Conversely, although being the minority, a small group of remote e-workers adopted less healthier behaviours. This referred to either eating habits becoming worse when working from home, as it was easier for individuals to snack, or exercising less as the walking involved when commuting to an office was not there anymore. Also, it was commonly stated among remote e-workers who travelled a lot due to work purposes and those who were working from different client sites, that they were led to a less healthy lifestyle. This was linked to both their fast-paced schedule which restricted the time to exercise and to the unhealthy food on offer.

*"I mean when I like travel and on the move that worse because you can only eat what's on offer and if you're hungry and then you just, you can be just taking, eating rubbish, you know, you are governed as well" P22*

*"When I'm working away em, I tend to end up eating in a hotel a lot, or a bar, or a restaurant, somewhere that food isn't as health..." P35*

As interviewees' narratives revealed there were two main contributing factors to health-related behaviours that individuals adopted. Firstly, the existence of individual differences may help to explain the variation among remote e-workers. Remote e-workers acknowledged that eating and exercise habits are also influenced by their own preferences and choices, suggesting a self-drive to be healthier, fitter, and more active. In many cases, individuals had to make a conscious effort to ensure that they stay healthy and fit. Specifically, whereas most remote e-workers perceived doing overnights at hotels as restrictive, because they did not have much free time, or they felt very tired from driving, one particular remote e-worker suggested that he would book hotels based on the criterion that they had gym and pool facilities. As a second factor, it was observed that the type of

remote e-working could be pivotal. In particular, individuals who travelled the most, and stayed overnights for work purposes were the ones who suggested that they struggled the most maintaining a healthy lifestyle.

In summary these findings may be contradictory, to interview data, as it was overall found that remote e-working can be an enabler to a healthier lifestyle. This is normally due to the flexibility around individuals' day scheduling and the gained time which can be dedicated to doing exercise or to planning and more wisely choosing meals and snacks. However, the individuals' personal choices and the specific type of remote e-working (i.e., travelling a lot) seem to play an essential role, and it is down to the individual to take advantage of this enabler, or to adopt more unhealthy behaviours.

#### **4.6.4. Theme 4: Impact on cognitive weariness.**

When asked to reflect on their cognitive weariness levels (i.e., tiredness and struggling to concentrate or take in new information due to overworking and using technology) the majority of employees suggested that working from home could increase concentration levels. Throughout the interviews it was suggested that remote e-workers could schedule to do the *"right work, at the right time and place"* P35. The office was suggested to turn into a place where people socialise, have their face-to-face meetings and interactions, and working from home could be used when individuals wanted to concentrate more.

*"I think it's probably more conducive because you are able, by enlarge, to create your own environment So, you know, if you concentrate, so in my little office, in my spare room, em the first thing I did was to buy a radio so, I like background noise but I don't like, I am easily distracted when I'm in an office where conversations are going around me, because that, because I want to join in. So [laughing] the radio helps me to have that background noise but without being a distraction for me."P6*

In the quote above there are a several characteristics of remote e-working that decrease cognitive weariness levels. In particular, individuals can by enlarge avoid distractions such as office noises, colleagues approaching them with work-related

matters, or engaging in ‘social banter’. The hierarchically higher individuals’ job role was, the more they claimed having colleagues coming over to see them and wanting a chat for work-related matters.

Although individuals were less exposed to ‘social distractions’ when e-working remotely, they were more exposed to what it can be classified as ‘e-distractions’. These included emails, phone calls, and instant messages. Hence, ruling out noise, chatting, and colleagues’ interruption had the potential to improve concentration and weariness, but some interviewees talked about the importance of also properly logging off, in order to eliminate ‘e-noise’. Disconnecting was proposed to eliminate distractions and, consequently, allowed individuals to absorb more information. This seemed necessary as remote e-workers’ nature of work demanded in many cases being constantly available to people, and communicating with colleagues via electronic means. Individuals also suggested that they had more control on how their environment is set up, which again benefited concentration. A few interviewees made use of the available flexibility around their work location, and chose to work in cafes. This change of scenery was suggested to help them concentrate and get more work done. Numerous participants appreciated the fact that they could take a break, away from the screen (e.g., spend some time in the garden), which refreshed them and increased their concentration.

Notwithstanding the benefits of remote e-working on concentration and taking new information in, participants suggested that individuals should stay disciplined and not get distracted by tasks around the house or other personal matters, as remote e-working makes it very tempting to be receptive to those. Furthermore, remote e-workers who had to travel a lot for their jobs made the most frequent reference to being tired and cognitively weary from their jobs. As the quote below illustrates, the combination of

missing information, not having a good understanding, and the absence of colleagues sitting next to you, can increase cognitive weariness levels:

*“[...]just being able to, especially with new things and especially when sometimes the way that people write isn't so clear, so just being able to discuss something with a colleague next to you, can help you understand and to get it fixed in your mind as to what you're doing now and what your new procedure is going to be [...] And again, I think that can impact on your confidence and maybe your understanding and all sorts. So it does make a difference (referring to cognitive weariness levels).” P36*

More creative or tasks which involved working in groups were proposed to be more effectively conducted in a face-to-face setting.

#### **4.6.5. Theme 5: Experiencing switching-off from work**

When asked to reflect on their ability to switch off when e-working remotely, all interviewees acknowledged the importance of detaching and unwinding from work. They recognised this as a fundamental process, in order to recover from work and be more productive the following day. Many individuals suggested that taking this break from their work was what allowed them to come up with solutions to ongoing issues. On the contrary, not switching-off was proposed to make individuals more cognitively weary.

##### **4.6.5.1. Sub-theme: Enablers to switching-off from work.**

Findings suggested that the reality around switching-off and unwinding from work was more complex than initially contended, with individuals experiencing detachment from work in different ways. A group of participants suggested that they could switch-off much quicker when being away from the office environment. These interviewees suggested that they could finish work and start dealing with their personal life straight away. Time saved from travelling was dedicated to other activities outside work, such as spending time to do their hobbies. When asked why they switched-off easier when working from home:



*"Because you haven't got to drive, or you haven't got a train journey, or you haven't got to think, you know... deal with people after work... you literally can just shut that laptop at 4 or 5 and go right, that's it, done for an hour or so. Instead of driving home, you're already worrying about something else..." P25*

What else helped a couple of individuals to switch-off from work was the fact that they were pleased with what they achieved, as they felt very productive at the end of the day.

#### **4.6.5.2. Sub-theme: Obstacles to switching-off from work.**

In contrast, there were some interviewees expanding on how remote e-working made it harder to switch-off from work. The most cited reason to that was technology use, and the expected availability of individuals. Having constant access to work, and all the devices to hand (e.g., computers and smartphones) made it greatly tempting to spend more hours working, or logging in later in the day to check emails and do extra work.

*"But I'm still...I'm still thinking about it. I haven't really switched off. So, just so, it just makes it longer and longer day. But I think it's that sort of constant because of having laptops and phones and that you're contactable 24/7 because I told people there's some magic wand in the phone it's called off. [Laughs] all you have to do is press it." P13*

It was also highlighted that emailing people outside hours could be an observed phenomenon, which should be treated with caution as it could interfere with individuals' ability to switch-off from work. More generically, role models seemed to be detrimental, as they can drive individuals' behaviours.

*"My behaviour drives their behaviour and my boss's behaviour drives my behaviour so you can, you see some teams in business units emailing Sunday night, things like that. [...] I think, you know, that's creating the inability to switch off from work so I'm responsible for my teams well-being in that respect and my behaviour will probably dictate when they do something but I'm quite upfront with them." P27*

There were a few remote e-workers who claimed switching-off linked to their personalities and who they are. A combination of having the technology available and not making good use of it could make the switching-off process even harder.

*“...it's our fault, not the technology's fault, but when you have a smart phone and you can access your work email at 10 o'clock in the evening, and you look at it and there's still another couple of emails that have just come in at 9.45, then there is a dreadful habit, bad habit, that you get into in you carry on working for very long hours. [...] So having mobile devices that allows you to connect work email, at any time in a 24 hour period, on any day of the wee, quite often most of us treat that badly and we use it, and we don't switch off and we keep accessing it.” P10*

Switching-off seemed to be harder when people are new to working away from the office. A good number of individuals described how it took them a while to get used to this particular way of working. This finding was mainly portrayed in participants' recalling their past experiences. Interestingly though, this was in line with the most recent remote e-worker of the sample (i.e., being a remote e-worker for only two months) who found it extremely difficult to stop thinking about work:

*“Yes definitely because really your office is in your home, you have access to all of the technology that enables you to quickly interact with work so being an e-worker definitely made it harder (to switch-off).” P29*

Interviewees set their own coping strategies to better switch-off from work such as having dedicated offices at home, having separate phones, setting strict rules with their email such as not copying people in if not relevant. Also avoid checking emails when on leave:

*“When you going on holiday, you know, don't take your phone with you or if you do, you know, turn your email off so he displayed those attributes to me and gave me permission almost to be the same with my guys. It's okay to go on holiday. It's okay to have down time. If you don't do it you don't get a break eventually, you know, you'll fall on over. You'll become ineffective.” P16*

Taking this time off seemed to be pivotal in order for individuals to recover from work and be more effective.

#### **4.6.6. Theme 6: Emotional well-being.**

Work-related emotions were firstly explored in general, and then linked to the remote e-working experience. Interviewees referred to a plethora of emotions that linked to their remote e-working experience, disregarding whether working in the office or remotely.

These emotions were both positive and negative and were depending a lot on the nature of work that employees were doing, the current conditions at work (e.g., having upcoming deadlines), and the complexity of the tasks.

#### **4.6.6.1. Sub-theme: Positive emotions experienced.**

When interviewees were asked to indicate any links between their work-related emotions and how these influenced the way they worked, remote e-working was, within the majority of remote e-workers, proposed to have a mainly positive impact on individuals' emotions. This could be attributed to the ability to work from home, which was repeatedly mentioned as a valued and greatly appreciated benefit to individuals' working lives. In particular, individuals claimed that compared to working in an office, they felt happier with getting a better balance between their working and non-working lives. They felt more at ease and relaxed by being able to take more breaks if they wanted (e.g., spending sometime in the garden, or go for a walk). This was portrayed in Participant 28 words:

*"There are times when, so thinking back to Monday, the weather was absolutely gorgeous, so to be able to open the doors at home and be able to, I got a couple of phone calls so go and sit on the patio and do my phone calls and hear the birds singing. That's really joyful and relaxing and lovely, so that's a huge benefit and I feel really grateful."*

Individuals also mentioned how reduced commuting led to more positive emotions:

*"Yeah I guess part of it [positive emotions] is working from home, yeah. Because I don't have the stresses that I would have if I was commuting to the office each day, which can be a stressful experience sometimes. So I guess yeah, working from home does make a difference... to that sense of contentment, I guess."*P8

A number of remote e-workers who split their time between different locations expressed their excitement to be able to have a variation in the way they worked. Feeling proud, and grateful were also stated, as a result of being trusted to work in this flexible way. Also, having control over one's environment was found to link to a sense of contentment.

When feelings of emotional exhaustion were explicitly explored, individuals indeed suggested that the nature of their job, such as excessive demands and upcoming deadlines, played a pivotal role to these feelings. However, the majority of participants recommended that remote e-working can have a more positive influence to their levels of emotional exhaustion. The thinking space created, away from the office distractions, along with the greater control over one's job seemed to increase individuals' ability to complete more work; something that, in turn, decreased emotional exhaustion levels. One particular interviewee suggested that it really helped being able to take a break and come back to his work with a fresh eye:

*"... sometimes you either stop doing this let's say at 6 o'clock and then 2,3 hours doing whatever, get tea ready and have a chat to anyone that gets home that kind of stuff... then I'll pick it up a little bit later on when the energy levels have restarted and you've got a different perspective on it!" P18*

Thus, both dealing with personal life commitments easily, and the discussed flexibility around individuals' work seemed to release tension, and consequently decreased emotional exhaustion. This, in turn, allowed recovery and recuperation from work.

#### **4.6.6.2. Sub-theme: Negative emotions experienced.**

Although less frequently, individuals provided some negative emotions they experienced whilst e-working remotely. Particularly, several remote e-workers said that it was easy to experience emotions of loneliness, boredom, and sadness when the social interaction was reduced or eliminated. The way employees felt that they were left out from the company's socials, when working from home, ranged from minor situations, such as when cakes were brought into the office, to more important ones, such as when they were not kept up-to-date about important organisational changes. In addition, feelings of anger, frustration, and stress were mainly linked to issues with technology, or not being able to get hold of colleagues, as individuals could not progress their working tasks. Although this being mentioned only in a few interview data, some individuals

referred to guilt that comes with remote e-working. Interviewees suggested that they did not want people to think that they were not actually working, but they are 'slacking' (P6) instead. This led individuals working additional hours and staying at their desks for longer. This can perhaps be a less expected finding considering the fact that Novus was overall perceived as a supporting and trustful organisation to work for, being open to people working from everywhere.

*"... when I work from home I have my own inbuilt guilt-meter [laughs] so I've always worried that people are thinking that I am watching telly, em so I would say, when I work from home I do more hours than when I am in an office because my guiltful meter tells me that I don't want anybody to think that I am doing anything but working [laughs]" P6*

Participant 6 had a managing director position and seemed to care a lot about the work she produced, something that can recommend that these feelings may link to the position she held and personality traits. Another explanation to potential feelings of guilt could evolve around trust that specific managers showed:

*"Managers who are maybe themselves used to do...enabling trust people because they can't see them physically be working, that's one of the biggest challenges."*  
P12

or the fact that some colleagues could joke about individuals *"sitting in their dressing gown, drinking tea and coffee, watching this morning or Jeremy Kyle"* P10.

Notwithstanding the proposed positive impact of remote e-working on emotional exhaustion (discussed above), there were some pitfalls that are worth considering. Except from one interviewee who claimed that driving *"allows you to create more planned space for yourself to think about problems"* (P18), all the remote e-workers who were travelling long hours suggested getting physically tired, which was then reflected in emotional tiredness too. In addition, constant accessibility to work, which could then lead to longer hours, was a double-edged sword. Particularly, while most individuals claimed that being able to get more work done could actually relieve stress, reducing how emotionally

exhausted they felt, that was not the case for all interviewees. In particular, as mentioned in the disadvantages theme above, putting work down was becoming harder, as well as the expectation of being contactable was increased. Ineffective email use was given as an example of what could increase emotional exhaustion when e-working remotely:

*“I think we all have irritations in our job and I think probably, you know, one aspect of e-working that is em, irritating, and can probably get people down...it's email. Because email tends to accumulate in the sense that, I don't just mean my mailing inbox, but it is definitely a feature of it. But the fact that email is a poor medium for communication really. It's convenient for certain kinds of communication but it's poor for things like debates and people will tend to respond back to emails and start to debate by email and you could, you have another phone call and you find that you've got 17 emails in your inbox and that are accumulated in the last fifteen minutes.” P4*

Although only being claimed by two individuals, isolation and not being able to get emotional support from colleagues in person was suggested to increase emotional exhaustion. This occurred due to lack of proximity with colleagues which led to not being able to talk about distressing matters and offload. This was observed to be worse when individuals did not have an extended social network, outside work.

#### **4.6.7. Theme 7: Social isolation and maintaining relationships.**

Discussions around social relationships proposed that the trusting organisational culture could play a fundamental role in the development and flourishing of relationships; as in their majority, remote e-workers were pleased with their existing relationships with both colleagues and supervisors. However, individuals suggested that the threat of isolation was indeed looming large:

*“I guess the only downside would be is that you are slightly more isolated. [...] And I guess you don't make perhaps the sort of wider network connections within the organisation so easily, because you are not bumping into people in the office ...”P38*

As shown in the quote provided above, one of the most cited reasons which could lead to social isolation was the loss of physical contact with colleagues. Individuals described social isolation as a situation in which they felt been excluded from social activity with

colleagues, or an overall sense of being forgotten by colleagues or supervisors, feeling as though they are not counted as valuable team members. Additionally, some e-workers claimed that they occasionally missed having face-to-face interaction, rather than communicating via email or instant messages. Having someone to ‘bounce ideas off’ was suggested to be one of the main aspects of office work that gets lost when individuals are not physically next to each other. It is worth noting though, that most of the individuals have experienced these feelings of social isolation more intensively in the beginning of their remote e-working experience, but this improved as time passed and they gained more experience in e-working remotely.

Considering the change in the nature of relationships, following remote e-working practices, interviewees proposed that each member of the organisation had a role to play. To start with the individual aspect, many interviewees suggested that the attitude that individuals had towards their relationships and how they built and maintained those was pivotal. It was suggested that having the necessary technologies, which enable communication, was not enough, but it was also the way that individuals used those, to reach colleagues and supervisors.

*“I think it’s more about how you build your relationships with people, how you engage with people, it’s important you obviously need... if you’re gonna work remotely, you need to have access to your companies systems but I think the blocker to all of these things is never the technology, it’s the person” P14.*

As indicated in the quote below, being proactive, by trying to get hold of important people in the organisation becomes massively important. A conscious effort to be in touch with colleagues is needed in order to avoid becoming isolated.

*“Because again, you can become quite isolated from your line manager unless you make that effort to contact them. Because they’ll quite happily let you carry on doing what you’re doing. You think that’s ok, but you don’t know what I’m doing. I’d rather you know what I’m doing actually...!” P25*

Regarding the role of that manager, subordinates suggested that a more relaxed, encouraging and motivational management style was preferred when e-working remotely, favouring autonomy and flexibility over individuals' workload. It was suggested that this particular type of work may occasionally blur the picture of what is expected of the individuals, which can be very frustrating. Therefore, being clear about objectives and setting specific milestones was suggested to be of great importance. This, in turn, could keep the employees motivated and focused towards their goals and expected outcomes. As interviewees proposed, it was essential that their managers avoided micro-management, which was a trap that managers can easily fall into when they cannot visually see that individuals are working as they should. Whilst micromanagement was proposed to create more stress as it did not allow individuals to become more independent, feeling trusted by their managers individuals to be more effective to do their jobs properly.

*"I think it's important for a manager to, firstly to be able to trust that their employees are going to be able to work in the way that they require to work when they're not visible in an office, so I think there has to be an element of trust between the manager and the employee. [...] I think that's probably the main thing, yeah, I think the trust has to be there" P27*

The majority of remote e-workers stated that managers should be approachable and plan regular face-to-face contact with their team, to avoid remote e-workers feeling withdrawn. In the meantime, good employee-manager relationship should be built upon and be accompanied by open channels of communication, where individuals are encouraged to contact their manager and seek for help or guidance. Keeping employees up-to-date on any changes, and ensuring that every member of the team felt like they hold the same amount of information was supported to be an important aspect of the employee-manager relationship. Managers, from their point of view, mostly agreed with subordinates' propositions. They added that maintaining personal contact, and getting to know team members very well gained even greater importance than a face-to-face context.



*“So that’s why building relationships within our remote team is more important even that in an office because you need to be able to understand what’s going on in people’s lives and what’s impacting their work and it’s hard to do that if you don’t have a good relationship with them and to understand that you might be working in a part of the business that’s making people redundant and they’re going through a really difficult time and if you’re not close enough to the team that you’re working with you won’t know...”P4*

According to the quote above, missing visual cues requires an even greater effort to understand if individuals are struggling.

Interviewees also revealed the pivotal role that each organisation can play in maintaining healthy and effective relationships. Notwithstanding the indication that Novus supported remote e-working, individuals still highlighted organisations’ responsibility to involve individuals who were away from the company, in any communications (e.g., informing individuals about change, inviting them to events).

A noteworthy point made was about the importance of having some sort of communication or interaction, in a way that it is not electronic. Interviewees accepted and were happy about the fact that face-to-face communication would be reduced (or eliminated) due to e-working remotely. However, they still enjoyed when they actually got to see their colleagues, even if that was not the norm anymore.

*“I do think you know almost for the mental health, if you like, someone who works a lot at home, or does a lot of e-working that can have, communication with their colleagues which is actually quite important, in a way that’s not electronic?” P12*

As it is indicated by the quotes below, although the use of technology could bring individuals together, face-to-face contact was suggested to be irreplaceable. One of the main reasons was that communication in person could be richer visual cues, involving body language, something that technology could not offer.

*“I don’t think anything can quite replace proper, face to face human contact, you know, cause even with things like webcams you still don’t get quite the visual cues you get as we’re doing now, you know, I’m using my hand gestures and making eye contact as we’re speaking, that is never quite replaced with technology, you can get part of the way but not the whole way.” P26*

The unplanned conversations, which can be part of face-to-face interaction, were also appreciated as they could spark conversations, and inspire people about developmental opportunities. Participant 7 drew upon a case where team meetings were cancelled to save money from travelling suggesting that this could have an effect on team morale, which can be detrimental for organisational cohesiveness.

#### **4.6.3.1. Sub-theme: Personality and relationship building.**

A final, but still pivotal point concerned how personality types could affect how individuals experienced their social relationships, managing them effectively.

*“I think it suits some people and it doesn’t suit others. You need to be confident to reach out to people and ask for help.” P147*

There was the consensus that individuals who are very introverted, or ‘relatively anti-social’ remote e-working can actually work well, as these people do not necessarily seek frequent face-to-face interaction.

*“Again your personality trait and absence portray your personality trait determines whether you can be a good home worker or not, so you’d find that if you’re an introvert or quiet, quiet by nature you would have the personality to be a good home worker. [...]My personality is... I’m an introvert and quiet so I can...I don’t depend on other people to on a day to day basis. I don’t, I don’t, I’ve always found it well not irritating, I’ve always found, you know when you got to offices and there’s always people in the kitchen chatting, I have never done that. I always found it irritating.” P15*

However, individuals who were extroverted and sought in-person social interaction would probably not enjoy this particular way of working, especially when they are full-time remote e-workers. As indicated in the quote below though, these individuals were very keen on working towards creating bonds with colleagues and staying in touch:

*“I do try and go see what other people think in the company that I’ve probably not seen or spoken to for several months, em... So obviously I try to maintain a really strong working relationship with people ... if you just don’t contact them that regularly, then maybe the times that they should be coming for help or advice...because you don’t see each other as regularly, you are not at the forefront of their thoughts, you know...” P35*

This links to the claim made above, about the importance of being proactive when it comes to relationship building.

#### **4.6.8. Theme 8: Impact on professional well-being**

This theme explored remote e-workers' professional well-being, seeking information on perceptions of career development, autonomy, and competencies.

##### **4.6.8.1. Sub-theme: Career development/progression.**

Interviewees suggested that being part of an organisation that embraces and supports remote e-working (such as Novus) was fundamentally important for their career progression and development. This was due to the fact that results ultimately driven their progression. However, some individuals did outline some of the dangers of not being physically present in an office environment. This was especially prominent when individuals first started e-working remotely, as they worried about being forgotten regarding career opportunities and relevant training. In some cases, individuals felt comfortable raising this issue in performance appraisal meetings, where they indeed felt heard by their manager.

Regardless of opportunities been available to remote e-workers, several individuals still emphasised that they had to approach their career development with a slightly different manner, in comparison to full-time office based colleagues. Individuals precisely expressed the need to consciously make themselves seen. This involved face-to-face interaction, when this was an option. Similarly to the social dimension described above, interviewees expanded on the importance of building relationships with key people within the organisation.

*“If I ever feel like that’s happening (feeling not being counted) I’ll go and go into an office, and that comes back to when you go into an office, about making yourself very visible and making yourself seen and having some sensible conversation with the right people in the right organisation part of the business.”*  
P27

“Making themselves seen” could also happen electronically. Specifically, there was a subgroup of remote e-workers who expanded on the necessity of getting across what they were achieving, communicating any issues they were facing. They acknowledged that this may be easier for face-to-face employees, as their supervisors are often of close distance, but it gets more challenging when individuals are ‘out of sight’.

However, some of the interviewees pointed out that they could ‘sacrifice’ career progression and salary in order to maintain flexibility that comes with remote e-working. This highlights how much individuals valued and appreciated the flexibility, especially when individuals had families that demanded them to be available.

#### **4.6.8.1. Sub-theme: Autonomy.**

Interviewees’ narratives supported that remote e-working is inextricably linked to higher levels of job autonomy. The majority of them suggested that remote e-working makes individuals more autonomous as they could make decisions themselves, decide the shape of their day and decide their priorities. As a participant suggested, the expected results were the same, but the way to approach the solution was what changed. Participant 6 brought the example of: *“whereas if you are sat in an office there is always the temptation of somebody to come over and ask you to a meeting or ask you to do something, em because you are there”*. This example shows how physical presence in an office can link to receiving requests from colleagues which can hinder control over someone’s work schedule. Overall, interviewees acknowledged that remote e-working required being independent, self-sufficient, and autonomous.

Autonomy concerned the location of individuals’ work (i.e., deciding which task to do in which place), the best way to get a task done, prioritising tasks, and flexing their hours; with supervisors being very negotiable about what is expected. There was a sample of individuals who deliberately chose to adhere to a strict routine (e.g., working 9-5) as

they either preferred, or because they had to. Individuals also chose to work these specific hours when they were expected to be visible at these certain times. It is worth mentioning though, that the higher the position individuals possess within the organisation, the more comfortable they were to flex their time and change the scheduling of their work. In contrast, for some job roles individuals had to be present, on their desks, on fixed working hours. There were some interviewees suggesting that it can actually work the other way round as individuals need to be autonomous so they could work in a more agile way.

The organisation's culture can be a major contributor to this increased autonomy. The management style was suggested to be very important as *"you know getting the feeling that you can make decisions and you won't be, you know, criticized if you make a wrong decision and you know so yeah I think that's really really important"* (P12). Individuals proposed that granting individuals autonomy came right from the top of the company, with managers being like that anyway.

#### **4.6.3.1. Sub-theme: A competent and effective remote e-worker.**

When asked to profile a competent and effective remote e-worker, interviewees suggested that there were specific competencies (i.e., knowledge, skills, and abilities) which were crucial for a successful remote e-worker. Most importantly, remaining disciplined and focused on getting things done was suggested to become even more pivotal than in an office environment. This was because individuals had more flexibility around their work and how to conduct it, but also, because they very often had their home surroundings which could distract them while trying to get some work done.

*"...you have to be very disciplined because it's very easy when you're at home and your familiar surroundings to almost forget that you're actually at work ..."*  
P11

It was, thus, suggested that individuals had to *"stick within the confines of their flexibility"* (P22). This could also be harder when individuals first start working in this way.

*“It’s always quite difficult to get started. I think they’re the pitfalls when you first start. I’ve been doing it for a long time now so I kind of, I know if I fall into that trap I know what the repercussions are so I will be quite disciplined.” P27*

Being self-motivated was also suggested to be very important as individuals do not have the office pressure around them to get things done; as well as because of a blurred picture about what is expected, and what needs to be achieved. In addition, good communication skills seemed to be a very important competency. As indicated by the quote below, this especially matters when communicating through electronic means, with people who are actually out of sight, as a very careful choice of words, and tone of the language is needed to effectively get the message across.

*“I think you also need, em you need really really good communication skills because if you only going to use...if primarily the way you are going to communicate is electronically em, rather than face to face then you absolutely need to be conscious of the words that you are using and if the tone of voice doesn’t translate very well in email. So you need to be, you need to be directing your emails so it’s very clear what you are asking and what you are looking for, but at the same time you need to be conscious that you need to have that sanity check to reread something and think, can this be interpreted differently?” P6*

Although very technical knowledge about systems and computers was not necessary, individuals emphasised how important it was for individuals to be confident in resolving work-related issues that may arise by using ICTs (such as emails, calls, and instant messages). It was also suggested by a few individuals that remote e-workers should be choosing wisely the most efficient and appropriate means of communication, depending on the issues that need to be resolved. For instance, in cases when email exchange was proposed to becoming overwhelming, alternative communication media such as telephone was proposed to be more appropriate to resolve an issue quickly. However, it was suggested that individuals were tentative in making use of the phone, with email coming across as the most comfortable way of communication. Lastly, individuals’

narrations highlighted the importance of having good knowledge of themselves and their own capabilities, as these are indicators of an effective and competent remote e-worker.

#### **4.7. Discussion**

The aim of the present study was threefold: (i) to create and lead the item development of the E-Work Well-being (EWW) scale (see Chapter 5), (ii) to examine whether Van Horn et al.'s (2004) well-being model was suitable when examining remote workers' well-being, and (iii) to understand more in-depth some dimensions included in the theoretical model, but empirically overlooked. Information gathered not only allowed for a deeper exploration of the constructs of interest (i.e., dimensions and sub-dimensions of well-being), but it also revealed their unique link with remote e-working. The good range of characteristics of the remote e-working arrangement which is encapsulated in participants' work differing scheduling and location, allowed the study to delve deeper into the examined relationship between remote e-working and well-being at work; resolving inconclusiveness in previous findings (Gold & Mustafa, 2013). As it is expanded below, the originality of this piece of research stems from the fact that it both confirms previous research and sheds light to some of the questions that have been unaddressed by scholars. In summary, findings confirm that the overall remote e-working experience and its impact on individuals' well-being can be a complex and multi-dimensional phenomenon; requiring the right blend and balance for it to succeed.

##### **4.7.1. The impact of remote e-working relating to the five well-being dimensions**

Findings suggested that it is important to adopt a multi-dimensional approach in order to investigate the ways in which the intertwining dimensions and context influence remote e-workers' well-being. Van Horn's (2004) multi-dimensional model to well-being at work which was used provided a framework to analyse data and the themes. Based on Van Horn's (2004) conceptualisation of well-being at work, and as thoroughly discussed

in the section below, remote e-workers were asked to reflect on their affective well-being, by focusing on their emotions, organisational commitment, job satisfaction, and emotional exhaustion levels. They were also encouraged to reflect on their social well-being by expanding on relationships with colleagues and supervisors, and any social isolation feelings they experienced. They were also questioned about their professional well-being, reflecting on their autonomy, and competence levels, along with their career progression perceptions. Finally, they were asked to discuss about their psychosomatic health and any exacerbations caused by remote e-working.

Going beyond exploring the well-being dimensions proposed by Van Horn et al. (2004), pivotal contributing factors to well-being such as health-related behaviours and switching off from work were also considered, since these areas seemed to be understudied within remote e-working literature (Charalampous et al., 2018). In addition to the theoretically guided themes, data-driven themes were also revealed, which drew upon the benefits and drawbacks of remote e-working. In particular, interview data revealed risks imposed by remote e-working to psychosomatic health, the importance of having a relationship in a medium which is not electronic, and the role that individual differences played to individuals' lifestyle and relationship building.

The findings have confirmed from the already existing literature, remote e-working was again proposed to have certain advantages such as: greater flexibility over the timing and location of individuals' work (Messenger & Gschwind, 2016), better balance of individuals' personal and working lives (Kelliher, & de Menezes, 2019), less commuting (Felstead & Henseke, 2017), and thus avoiding stress induced by commuting (Kluger, 1998). In addition, the majority of individuals' narratives were in line with previous research suggesting that job satisfaction and organisational commitment can greatly link to remote e-working (De Menezes & Kelliher, 2017). It was also proposed



that the blurring of boundaries can be an issue when there is constant access to work (Kossek, 2016), with individuals adopting both integrating and separating boundary management styles (Kossek, Ruderman, Braddy, & Hannum, 2012). Email use was extensively discussed, with individuals suggesting that it is crucial to learn how to effectively send emails, something that was found to improve productivity and well-being (Pignata, Lushington, Sloan, & Buchanan, 2015). Reflecting previous literature (Russell, 2017), interviewees proposed that what increased the necessity of well-written emails is the fact that visual cues are not always available, and the message can sometimes be read with misunderstandings and more difficulties.

#### **4.7.1.1. Affective well-being dimension**

A more positive affectivity was mentioned, confirming that individuals may experience a greater range of positive, over negative emotions the days they are e-working remotely (Anderson et al. 2015). Findings also supported that remote e-workers experience less emotional exhaustion as autonomy might increase and role conflict and work pressures may decrease (Sardeshmukh et al. 2012). On the contrary, similarly to Vander Elst et al.'s (2017) findings, it was suggested that individuals who had less social support experienced greater levels of emotional exhaustion, as they could not share their problems and gain emotional support from colleagues. This finding corresponds to the systematic review findings, according to which social support becomes of even greater importance in a remote workforce (Charalampous et al., 2018).

#### **4.7.1.2. Social well-being dimension**

When it comes to relationships, individuals confirmed that isolation is one of the greatest pitfalls and dangers for remote e-workers (Tietze & Musson, 2010; Wiesenfeld, Raghuram & Garud, 2001) as individuals felt occasionally being 'out of sight, out of mind' (Sewell & Taskin, 2015). The qualitative nature of the data allowed for a deeper

exploration of social isolation, recommending techniques that individuals could consider in order to prevent and reduce social isolation feelings. Particularly, a conscious effort to stay in touch with colleagues, and being more proactive in relationship building was proposed to help. This finding is in line with previous research suggesting that if remote e-workers could make effective use of ICTs, this could counterbalance the negative consequences of social isolation (Lal & Dwivedi, 2009; Sewell & Taskin, 2015). Moreover, findings outlined the important role that managers and organisations play when establishing and maintaining good relationships. Briefly, it was suggested that there is a tremendous need for organisations that use remote e-working to shift from a micro-management culture to a more trusting one, where there are open communication channels and a constant update on the team and organisational matters. This trusting element in relationships, and social support were repeatedly suggested to contribute to a more successful remote workforce, which in turn can positively influence employee outcomes (Bentley et al., 2016; Charalampous et al., 2018; Mulki & Jaramillo, 2011).

The present study highlighted that nothing can truly replace the human interaction and face-to-face communication. Although individuals were found to build good quality relationships, with technology indeed being a greater enabler to staying in touch with work (Handy, 1995), in many cases they emphasised how much they missed and valued face-to-face interaction. While this may be reading as a cliché, findings remind us that no matter how much work is enabled electronically, there is something about face-to-face interaction that will always be valuable, and irreplaceable. The findings from the present study suggest that even if individuals can form strong connections with their colleagues, regardless of being separated by large distances (O'Leary, Wilson, & Metiu, 2014) face-to-face interaction should still not be underestimated.

Findings also suggested that the degree to which individuals enjoyed working from home and the way they approached people and built their relationships varied based on individual differences, and specifically personality traits. In particular, individuals who called themselves more ‘introvert’, ‘relatively anti-social’, or suggested being ‘odd characters’ who did ‘enjoy not talking to people at work’, seemed to be in better terms with the isolation that comes with remote e-working. On the contrary, individuals who classified themselves as ‘extroverts’ or ‘sociable’ were the ones who mostly claimed making a conscious effort to stay in touch with colleagues, making sure that the distance from colleagues was not deteriorating their relationships. This finding is in accordance with previous suggestions that individuals with a high need for socialisation might find it harder to e-work remotely (Baruch, 2000). Notably, individuals who both described themselves as more social and had the choice to work from office locations too, expressed their appreciation of having both the flexibility and the variety that comes with working from differing locations. This finding somehow answers Anderson’s (2015) question about why ‘open to experience’ individuals, who are often found to be extroverted too (Gocłowska, Ritter, Elliot, & Baas, 2019) could enjoy remote e-working more. Hence, the findings of the present study highlight the importance of further investigating individual differences (and personality traits) which remains vastly unexplored in the remote e-working literature (see Anderson et al. 2015 & Luse, McElroy, Townsend & Demarie 2013 for exceptions).

A last, but still an important finding to consider, is social interaction outside work. Findings suggested that this pivotal especially to full-time working from home employees. Individuals working very often or full-time from home recommended that having the company of their husband/wife/partners’ or even neighbours could ameliorate feelings of isolation. Two individuals working full-time from home who were both single

and claimed that they did not have much support outside work, expressed greater feelings of social isolation. It is also noteworthy that individuals who split their time between home and office locations referred less to social connectedness outside work. This finding highlights how the greater isolation that is linked to remote e-working (Golden et al., 2008) may have a detrimental impact on individuals who work full-time from home and have fewer social relationships outside work.

#### **4.7.1.3. Professional well-being dimension**

Considering the professional well-being dimension, an essential amount of information was retrieved about individuals' perceptions of autonomy, career progression, and competencies as impacted by remote e-working. To start with autonomy, interviewees proposed that remote e-workers were granted great levels of autonomy, as it has often been proposed by past research (Gajendran & Harrison, 2007; Gajendran et al. 2014). In addition, interviewees suggested that an efficient and a competent remote e-worker, needs to be self-disciplined, and to *'stick within the confines of their flexibility'* (P22). In other words, this autonomy needs to be wisely used, staying focused on needs to be completed.

Related to career opportunities and advancement individuals seemed to be overall happy with the amount of opportunities that they received from their organisation, something that was also suggested by Gajendran and Harrison's (2007) meta-analytical findings. Although professional isolation could be something that slightly concerned individuals (Golden et al. 2008), this was not supported to be a massive issue. Gajendran and Harrison's (2007) had hypothesised that we may perhaps not detect any changes to career opportunities perceptions as a result of having samples consisting of mostly women, who appreciate the increased control over their personal and working lives. In contrary, by including a good variety of both male and female participants where participants were mostly in agreement, the present study allows us to reject Gajendran

and Harrison's (2007) hypothesis and propose that career advancement opportunities within remote e-workers may be free from gender bias. Instead, it could be proposed that supportive organisations, such as the one examined in the present study, tend to be more inclusive, which can benefit individuals' satisfaction with opportunities provided. Similarly to social relationships, individuals who classified themselves as 'extroverts' or 'sociable' were the ones who expanded on the importance of taking actions towards career development. These participants claimed that they were actively chasing opportunities and meeting with important individuals for their careers.

Individuals' narrations also outlined the profile of a competent and effective remote e-worker. Particularly, they highlighted the importance of being self-motivated as the face-to-face push from colleagues may be absent, as well as having even better communication skills and use the electronic means appropriately as they become the main way of interacting. These findings are mainly aligned with previous literature by Baruch (2000) and Richardson and McKenna (2014). Interviewees proposed that the beginning of their remote e-working was the most challenging time, as they did have to adapt to new working practices and structures. For example, individuals had to move from working in an office environment and being surrounded by their colleagues, to working in solitude and incorporating technologies to stay connected and perform their jobs. This finding highlights the change that comes with remote e-working. Trommsdorff's (2000) work on social change (i.e., "gradual unfolding of different ways of life", p. 58) suggested that during the change in one's environment both stressors and opportunities for development will be induced. In turn, how the individual will experience this change will inextricably depend on their contextual factors (e.g., wider social networks) and personal resources (e.g., emotional dispositions). Thus, acknowledging both opportunities and risks, as well

as looking into individuals' context and needs, can definitely allow preparing and supporting individuals in their adaptation to remote e-working practices.

#### **4.7.1.4. Psychosomatic well-being dimension**

As previously mentioned, this study fills some gaps in our existing knowledge. More explicitly, the systematic review presented in Chapter 2, alongside a recent report by the Eurofound and the ILO (2017) have suggested that there is missing information around remote e-workers' psychosomatic conditions and health-related behaviours. Psychosomatic health findings suggested that remote e-workers did not have very serious health issues. However, they reported some musculoskeletal symptoms (such as pain in the shoulders and in the lower limbs), as well as symptoms relating to loss of physical energy, or in other words fatigue (Shirom, 1989). Although reported symptoms did not appear to be particularly worrying, individuals still expanded on changes they noticed in some of their behaviours, which could potentially worsen physical health conditions.

For some individuals, breaks throughout the day and leaving their desk was becoming less regular, as the office cues were not present, which was then leading to getting very absorbed with work. Taking into consideration the detrimental impact that sedentary behaviours can have on individuals' health (Tremblay et al., 2010), and how not having breaks can further increase the time that individuals sit, organisations should stay alerted and look after these employees who engage in such behaviours. For instance, individuals could be encouraged to set reminders and alerts to leave their desks, taking a break from the screen. The majority of remote e-workers who spent a good amount of their time travelling reported the unhealthiest behaviours (e.g., eating bad quality food, less exercise), the more psychosomatic conditions (e.g., stiffness in the body) and referred to extensive exhaustion. This finding is supported by Ding et al.'s (2014) study that reported in a 37,570 Australian sample that driving can be linked to lack of physical

activity, changes in sleep, increased levels of obesity, having detrimental effects on physical and mental health. This denotes the important role that organisations play, in monitoring how much time individuals spend travelling for work and ensuring that this does not put strain on individuals. Furthermore, long hours were reported. Although working long hours allows individuals to get the work done and release stress, we know from previous research that when this is constant it can harm individuals' health (Bannai, & Tamakoshi, 2014). Individuals suggested that they noticed that their workstations should be at a good standard to avoid any musculoskeletal pains; agreeing with Ellison's (2012) proposition that the remote office should be treated in the exact same way with the office workstation. According to Ellison (2012) the ergonomic risk for remote e-workers may increase when the same guidance and equipment is not provided. Although remote e-workers' psychosomatic health seemed to be overall fine, maintained habits and behaviours should be taken into great consideration, eliminating potential health risks.

On a more positive note, the findings of this study suggested that individuals may be enabled to adopt a more healthier lifestyle because of remote e-working; where they can fit in more exercise and have more control over their diet. Individual differences were again found to link to health-related behaviours, such as eating habits, exercise habits, and taking breaks. Self-driven and self-disciplined individuals, who expressed an innate desire to be healthy, made conscious efforts to exercise more, to eat healthier, and to take breaks frequently. Remote e-working involves the danger of adopting unhealthy behaviours, but simultaneously, it grants individuals with lots of flexibility which may be dedicated to fit more exercise in and plan meals better. All in all, even though individual differences were proposed to play a pivotal role to what kind of behaviours individuals will engage with, it is promising that remote e-working can actually be an enabler to a healthier lifestyle, something that individuals can choose.

#### **4.7.1.5. Cognitive well-being dimension**

Furthermore, the findings of this study provide light on remote e-workers' cognitive weariness levels, or in other words on how easy it is for individuals to concentrate and take new information in. There are few existing studies in this area and findings are contradictory. The findings also support that individuals can indeed take more information in and concentrate when working away from an office environment. This is in line, with Boell et al.'s (2016) analysis of online debates related to Yahoo!'s decision to stop remote e-working, which suggested that working away from an office environment can decrease interruptions leading to higher concentration. Interestingly though, interviewees reported some contributing factors that were outlined to be pivotal to the cognitive weariness levels, which are worth acknowledging. For example, there were some specific tasks that benefited from remote e-working such as reports or any other written work which demands an individual's full attention. In contrast, individuals found more exhausting having to be on the phone all day, recommending that face-to-face contact would be more beneficial for tasks that demanded interaction within colleagues. A similar case would be for creative or collaborative tasks, where being together seemed to be more appropriate to share ideas (Boell et al., 2016). Overall, findings suggested that a combination of isolated work at home, or writing reports in cafes, and then visits to the main office location was supported to be ideal and preferred. These findings are aligned with previous prepositions made by researchers, according to which remote e-working is most beneficial and effective when it takes place as a part-time arrangement (e.g., Caillier, 2012; Golden, 2006b; Golden & Veiga, 2005; Virick et al. 2010). Hence, the present study concludes that the appropriateness and effectiveness of remote e-working are extremely embedded in work practices and contextual factors.



Additionally, individuals indicated that their daily routine involved using ICTs, and especially emails, phone calls, and instant messages. They claimed that all these ICT interactions were interrupting and distracting them from conducting their work (Leonardi et al., 2010), something that can lead to impaired concentration (Braukmann et al., 2018). Many individuals claimed that they were purposely disconnecting to focus more on their work. A question that may be raised here is what would have happened if the organisation was not supporting remote e-working at this level and if employees felt obliged to be switched on, on a constant basis? In this scenario, it is highly likely that individuals would suffer much more from impaired concentration, as in 'always-on' cultures individuals feel pressurised to be constantly available (Derks et al., 2015; Suh & Lee, 2017).

Interviewees who opted for having a quick break away from their workstation seemed to be the ones who experienced the lowest cognitive weariness levels, as they returned refreshed to work. This, consequently, suggests that there are some actions which may enable better concentration (i.e., less cognitive weariness). Organisations, and precisely managers, should encourage individuals to leave their screens, especially when individuals feel guilty to do so, because they do not want their colleagues to think that they are not working. Last but not least, being more self-disciplined was supported to benefit individuals' concentration levels, as these individuals could solely focus on work, without getting distracted from personal life. In summary, the present study found that individuals, who were not switching-off from work, tend to feel more cognitively weary, which was, in turn, suggested to be one of the main determinants to an individual's recovery (Cropley & Zijlstra, 2011). Therefore, this piece of research answers the questions imposed by the systematic review in Chapter 2 (Charalampous et al. 2018); suggesting that remote e-working along with the use of ICTs might make it more difficult for individuals to switch-off and unwind from work. This can be especially challenging

for new starters, who are not used to remote e-working practices, and individuals who have a tendency to keep going back to work. On the contrary, putting strategies in place (such as separating work and personal spaces) can make switching-off from work easier.

These findings conclude and recommend that remote e-working can have an impact on individuals' affective, cognitive, social, professional and psychosomatic well-being. Nevertheless, the answer to our paradoxical findings could be that reality is not necessarily black or white, with one size not fitting all. Instead, interviewees' narratives throughout have suggested that when it comes to this way of work, "*it needs to be the right blend*" P28. For instance, the amount of time individuals spent in each location (if they have a choice) could make them happier with the amount of solitude and the amount of collaborative work they do (Gajendran & Harrison, 2007); the amount of emails they receive, and how much their job allows them to disconnect for a couple of hours to finish the task in hand; how much they use their flexibility to take a break and spend some time for their personal and working commitments or how this can distract them. In all these spectrums, individuals need to find the right blend for them.

#### **4.7.3. Practical implications**

The section below discusses four key practical implications proposed by this study that could improve the remote e-working experience and enable organisations to thrive.

- As remote e-working can bring changes to working practices, individuals who are newly introduced to this way of working should be provided with essential guidance and information, acknowledging its possible pitfalls. This can both prepare and guide new starters in remote e-working and also enable them to decide if this right working arrangement for them. Guidance can be offered using videos (perhaps existing remote e-workers could share their experiences), including information in organisations' internal website, and during company events where remote e-workers can visit

company offices to socialise and discuss any issues. Training about important competencies could be delivered during which individuals would be discussing some key competencies (such as self-discipline and self-motivation), to enable a more effective and competent remote e-working workforce. Managers could, also, dedicate time in their performance appraisals to further discuss any problems or issues relating to the remote e-working per se.

- Educate individuals on how to use email as it becomes an essential and useful tool for employees to communicate with their colleagues and supervisors. The expectation around individuals' response to emails should also be better managed. Especially emails sent outside working hours and during weekends or holidays might intrude and spoil individuals' resting and personal time. Therefore, rethinking email use might be crucial in reducing overloaded inboxes, in improving communication, and in removing stress linked to answering emails when individuals are not supposed to be working. Moreover, it is very important that preferred working patterns are discussed and shared between colleagues. This, for instance, could be very useful when individuals email outside working hours, as they could communicate clearly to their colleagues that they do not expect an immediate response. Supervisors should not only lead by example, but also create and maintain a safe environment where individuals can share their preferences.
- A balance between electronic and face-to-face communication seems to be ideal for remote e-workers. Undeniably, some remote e-workers may be spread across the whole country, working in a variety of locations, and some others may be working full-time remotely, with no office commitments. However, the findings of this research advise that face-to-face communication should be encouraged when feasible, as it can satisfy individuals' need for social interaction and maintain the team morale.

There is an imperative need that managers, and the organisation in general, establish a balance between electronic and face-to-face meetings; making sure that remote e-workers do not have to travel enormous distances to go to a meeting but at the same time to fulfil their desire to meet their colleagues in person and exchange ideas.

- Workshops tailored to managers' needs (face-to-face or online) could take place to advise best ways of managing remote e-workers. As per the findings, managers' role is crucial in remote e-workers' satisfaction with their work, their engagement in the team, and effectiveness when remotely e-working. Ensuring that managers have the right skills, knowledge, and ability to manage remote e-workers is fundamental. Building on managers' capabilities and empowering them will make them more confident in trusting their staff and improving better internal communication.

#### **4.7.4. Limitations and future work**

Notwithstanding its value and contribution, the current study had several limitations that are worth outlining. The study was conducted within a specific organisation. This automatically means that generalisation of the findings to a wider population may be restricted. To counterbalance this, a very good number of employees were interviewed (i.e.,  $N = 40$ ), which led to the collation of rich and deep narratives. Individuals were also working in a variety of job roles, spending a range of time e-working remotely, which is at a degree missing from current literature. Novus seemed to be a very trusting and supportive organisation to be working for, which may have slightly led to more positive findings overall. How this could be of benefit though, is that it can promote good practice, and highlight how a healthy and enabling organisational environment can benefit individuals' well-being and overall working experience. Some of the themes that were reported reflected the pre-determined questions asked, and in particular the five proposed well-being dimensions. This has been critiqued by research to depict a lack of analytic

work (Braun & Clarke, 2006). Yet, analytic work can be illustrated in the over-arching themes across the entire dataset, where the patterning of responses revealed nuanced interpretations of the examined relationship between remote e-working and well-being at work. Underlying mechanisms which could contribute to the studied relationships were clearly identified. Scholars could investigate further individual differences and precisely personality traits, which were suggested to be pivotal when interpreting the impact that remote e-working has on individuals' well-being. The present study explored five distinct well-being dimensions, as well as relating concepts (e.g., switching-off from work) something that one might claim that can sacrifice depth over breadth. However, the interviews were numerous and satisfactorily long, providing a rich amount of data to answer the research question. Future research could focus solely on specific well-being dimensions, in order to get an even deeper understanding on the topic.

#### **4.7.5. Conclusion**

This study focused on a large number of interviews, within a well-reputed organisation. The qualitative information collated, analysed, and presented contributes to the key objective of this PhD research, which is to inform the item development for the E-Work Well-being scale. Simultaneously, this study expanded our theoretical knowledge about the impact that remote e-working can have on well-being at work. The eight themes revealed allowed to expand on the five well-being dimensions proposed by Van Horn et al. (2004; i.e., affective cognitive, social, professional, and psychosomatic). A greater understanding of contributing factors to remote e-workers' well-being was also offered, including but not being limited to the organisational context and culture, individual differences and personality types, individuals' job role and demands, the work location and the amount of time individuals spent working in each location, the way that technology is used in building and maintaining relationships. Switching-off from work

and health-related behaviours were also explored, as these have been understudied by existing research, and on a positive note, remote e-working was suggested to provide individuals with an overall healthier lifestyle. Individuals' narratives revealed that the answer to the research question might be more complex, with both advantages and disadvantages being present. This proposes that future research on the topic of well-being within remote e-workers should ideally examine more complex models, including underlying mechanisms, to provide more meaningful interpretations of existing results. Remote e-working seems to be an attractive work arrangement for employees, as it offers the opportunity to work in a way that suits individuals best, juggling personal and working demands. However, there is still an imperative need that organisations acknowledge any possible issues that may upset and or harm remote e-workers' well-being at work, ensuring that they do not become isolated or 'enslaved' in front of their computer screens.

## **Chapter 5: E-Work Well-being (EWW) Item Generation**

### **5.1. Overview**

This chapter sets out the item generation for the development and further validation of the E-Work Well-being (EWW) scale by following the Classical Test Theory (CTT). The item generation process was facilitated by a literature review and a consequent review of existing validated measures (Chapter 2), along with semi-structured interviews conducted within a good range of remote e-workers (Chapter 4). The present chapter, thus, introduces the 109 item version of the EWW scale, as it has been revised within the PhD research team. Following experts' rating and feedback, it then concludes with a 74 item version of the scale, in preparation for further validation processes.

### **5.2. Introduction**

As according to Step 1 by the Classical Test Theory (DeVellis, 2016), the theoretical basis of the scale was set out in Chapter 3. A systematic review of the literature provided a greater understanding, and thus definition, of the main constructs to be assessed by the E-Work Well-being scale, namely, remote e-working and well-being. This was, then, further explored and supported in Chapter 4, where semi-structured interviews within remote e-workers were conducted.

In this Chapter, the following steps linking to item generation were pursued:

**Step 2:** Generation of an item pool.

**Step 3:** Determination of the format for measurement.

**Step 4:** Initial item pool reviewed by experts

### **5.3. Scale Development and Item generation**

As already discussed in Chapter 1, the EWW scale was developed drawing upon Van Horn et al.'s (2004) multi-dimensional model of well-being at work (see Figure 1.1., p. 10). Initially, 150 items were generated for the EWW scale by the PhD researcher. These

were reviewed by the PhD supervisory team and amendments were completed based on this feedback. This process enabled face and content validity checks of the items, with the most effective items remaining. The review of the items within the supervisory team ensured that items had appropriate wording, examining whether the developed items reflected constructs' definitions, and they were suitable for an e-working population. Considering both the length and the complex nature of the EWW scale and its numerous versions presented throughout this thesis, the 109 item version of the scale (as revised by the supervisory team) is directly presented; which was sent to experts for external review.

Therefore, this chapter consists of two main sections. The first section provides a detailed description of the items developed for each dimension and sub-dimension. The item generation process was informed by the data gathered from the semi-structured interviews. The review of existing scales in the field was, then, utilised as an additional check (see Appendix G for a review of validated scales relating to well-being). Reviewing validated scales enriched the item development process as it either confirmed newly devised items, or led to an adaptation of already existing items, to ensure each constructs adequacy. The second section of the Chapter presents the experts' item rating and feedback on the 109 items EWW scale.

### **5.3.1. E-Work Well-being item generation for each dimension and sub-dimension.**

#### ***5.3.1.1. Affective well-being dimension (40 items)***

This dimension is comprised of four sub-scales (i.e., emotions, job satisfaction, emotional exhaustion, and organisational commitment).

##### ***5.3.1.1.1. Emotions (14 items)***

Based on the interviews conducted by the PhD researcher, a list of 14 emotions was compiled, considered to be particularly relevant to a remote e-working population researcher. Table 5.1. below provides a full list of the emotions and their source. In the



instructions, participants would be asked to rate how frequently remote e-working has made them feel the proposed emotions, in the past 30 days, scoring in a 5-point Likert scale (from *Almost never* to *Very frequently*). Existing measures assessing emotions were reviewed to ensure that a good range of emotions was covered by this list. There are several measures assessing emotions, either in general (e.g., The Positive and Negative Affect Schedule, PANAS by Watson, Clark, & Tellegen (1988) or in the working context (e.g., Job-related Affective Well-being Scale, JAWS by Van Katwyk et al. (2000). Nine out of the 14 emotions included in the EWW emotions list were also part of the JAWS measure (Van Katwyk et al., 2000). Additionally, the EWW scale included emotions which were balanced in all of the four quadrants suggested in Russell's (1980) circumplex model. According to Russell (1980), emotions might be grouped in four different quadrants based on their activation (i.e., high or low) and their valence (i.e. positive or negative). For example, feeling excited has high activation and positive valence, feeling bored has low activation and negative valence, feeling content has low activation and positive valence, and feeling sad has low activation and negative valence.

#### **5.3.1.1.2. Job Satisfaction (8 items)**

Eight items were created which would enable participants to rate how satisfied they are with different characteristics of their e-working practice, on a 5-point Likert scale (from *Not at all* to *A large extent*). Job satisfaction has been operationalised in two main ways: by using single item measures assessing global job satisfaction (e.g., Caillier, 2012; O'Neill et al., 2009) or by using multiple items to examine satisfaction with particular job aspects such as work, supervision, colleagues, pay, and promotion (e.g., Hackman & Oldham, 1975; Warr 1990). The approach followed in this study is aligned with the second school of thought, where aspects of individuals' job when e-working remotely are expected to influence their satisfaction levels. All eight items were newly developed and

Table 5.1.

*Items developed for the emotions sub-dimension*

No	Item	Source of the item
When e-working remotely I feel:		
1	Bored	Included in Russell's (1980) circumplex model of emotions, in JAWS's measure and in the interviews.
2	Guilty	Included in Russell's (1980) circumplex model of emotions and in the interviews.
3	Sad	Included in Russell's (1980) circumplex model of emotions, and in the interviews. Not included in the in JAWS's measure though, which included the feeling of being depressed instead.
4	Angry	Included in Russell's (1980) circumplex model of emotions, in JAWS's measure and in the interviews.
5	Frustrated	Included in Russell's (1980) circumplex model of emotions, in JAWS's measure and in the interviews.
6	Stressed	Included in Russell's (1980) circumplex model of emotions and in the interviews.
7	Lonely	Based solely on the interviews and the literature suggesting that social isolation is linked to remote e-working (e.g., Bailey & Kurland, 2002).
8	At ease	Included in Russell's (1980) circumplex model of emotions, in JAWS's measure and in the interviews.
9	Content	Included in Russell's (1980) circumplex model of emotions, in JAWS's measure and in the interviews.
10	Relaxed	Included in Russell's (1980) circumplex model of emotions, in JAWS's measure and in the interviews.
11	Happy	Included in Russell's (1980) circumplex model of emotions, in JAWS's measure and in the interviews.
12	Excited	Included in Russell's (1980) circumplex model of emotions, in JAWS's measure and in the interviews.
13	Proud	Included in Russell's (1980) circumplex model of emotions, in JAWS's measure and in the interviews.
14	Grateful	Based solely on the interviews and existing literature (e.g., Kossek et al., 2006).

*Notes.* JAWS's measure was developed by Van Katwyk et al. (2000)

inspired by the interviews conducted with remote e-workers (Chapter 4). These eight items were consequently reflecting the most commonly mentioned features of remote e-working (such as not being confined into an office or a single place/location and being

able to determine from where to work) which seemed to be linked to individuals' satisfaction levels. Table 5.2. below presents the exact items that were developed.

Table 5.2.

*Items developed for the job satisfaction sub-dimension*

No	Item	Source of the item
1	Not being constrained into an office or a single place/ location	For all newly developed items, the links between job satisfaction and remote e-working aspects were inspired by the interviews.
2	Determining when you come to the office and when you do not	
3	Balancing your personal and working life	
4	Being in control of your work scheduling	
5	Being flexible in where you are doing your work	
6	Having the space you need to reflect on your work	
7	Resting from long and intense days in the office	
8	Resting from long and intense days of travelling	

#### **5.3.1.1.3. Emotional Exhaustion (10 items)**

This sub-dimension included ten items that rate the frequency participants experience emotional exhaustion, on a 5-point Likert scale (from *Almost never* to *Very frequently*). Five out of the ten items reflected the aspects of exhaustion as described by the interviewees in Chapter 4. These items covered the aspects of feeling overwhelmed, the reduced vitality, the depletion in energy, and the struggle to get the energy back after work and recover. Links between these features of emotional exhaustion and specific characteristics of remote e-working (such as receiving too many emails, being always 'switched on', and having ICTs spilling into non-working) were made (see Table 5.3.

below). Next, the wide-used Maslach Burnout Inventory-General Survey (the MBI-General Survey; Schaufeli, Leiter, Maslach, & Jackson, 1996) was also reviewed. Five additional items were then developed covering the main aspects of exhaustion as were presented by the MBI (i.e., the emotional drain, the strain, the feeling of being used up, the feeling of being fatigued, and burned out). For those items, specific characteristics of remote e-workers' jobs were taken into consideration. As Table 5.3. displays, items from the MBI-General Survey were adapted to suit a remote e-working population.

Table 5.3.

*Items developed for the emotional exhaustion sub-dimension*

No	Item	Source of the item
1	I feel overwhelmed when I do not have my colleagues physically next to me to discuss work-related issues	This item was inspired by the interviews, denoting the main reasons individuals' felt emotionally exhausted.
2	My energy is depleted	This item was inspired by the interviews, denoting the main reasons individuals' felt emotionally exhausted.
3	I notice a drop in my vitality	This item was inspired by the interviews, denoting the main reasons individuals' felt emotionally exhausted.
4	I struggle to recover from work when I have the technologies and the facilities to do job tasks remotely easily	This item was inspired by the interviews, denoting the main reasons individuals' felt emotionally exhausted.
5	I struggle to get my energy back after a long day of remote e-working	This item was inspired by the interviews, denoting the main reasons individuals' felt emotionally exhausted.
6	I feel emotionally exhausted when I receive too many emails and instant messages from colleagues	Adapted from the item ' <i>I feel emotionally drained from my work</i> ' included in the MBI-General Survey; considering remote e-working characteristics.
7	I feel used up when I am always "switched on" using my electronic devices	Adapted from the item ' <i>I feel used up at the end of the workday</i> ' included in the MBI-General Survey; considering remote e-working characteristics.
8	I feel fatigued when I am overworked	Adapted from the item ' <i>I feel tired when I get up in the morning and have to face another day on the job</i> ' included in the MBI-General Survey; considering remote e-working characteristics.
9	I feel burned out when people expect me to be constantly available using technology	Adapted from the item ' <i>I feel burned out from my work</i> ' included in the MBI-General Survey; considering remote e-working characteristics.
10	I feel strained when using information and communication technologies spills into my non-working time	Adapted from the item ' <i>Working all day is really a strain for me</i> ' included in the MBI-General Survey; considering remote e-working characteristics.

*Notes.* The MBI-General Survey was developed by Schaufeli et al. (1996)

#### **5.3.1.1.4. Organisational Commitment (8 items)**

This construct included a set of eight items, which aimed to assess the degree to which individuals' values, and goals are aligned to their organisation, and their willingness to increase their efforts (Porter, Crampon & Smith, 1976). Four out of the eight items were inspired by the interviews conducted by the PhD researcher (see Chapter 4), and aimed to rate individuals' willingness to go the extra mile, their feeling of belongingness within their organisation, the identification with their organisation's norms, and their understanding of participating in the whole. Then, the British Organisation Commitment Scale (Cook & Wall, 1980) was reviewed to ensure that all features of the organisational commitment concepts were covered by the developed measure. Therefore, four out of the eight items of this sub-scale were adapted from Cook and Wall's items (1980), using interviewees' wording. A 5-point Likert scale (from *Strongly Disagree* to *Strongly Agree*) would again be used. Table 5.4. presents all the items developed and their source.

Table 5.4.

*Items developed for the organisational commitment sub-dimension*

No	Item	Source of the item
1	I feel as if I am part of the organisation	Adapted from the British Organisation Commitment Scale (Cook & Wall, 1980): <i>'I feel myself to be part of the organization.'</i>
2	I am currently not looking to move to another role	Adapted from the British Organisation Commitment Scale (Cook & Wall, 1980): <i>'The offer of a bit more money with another employer would not seriously make me think of changing my job'</i> –interviewees' wording considered.
3	I want to put significant effort on behalf of my organisation	Adapted from the British Organisation Commitment Scale (Cook & Wall, 1980): <i>'In my work I like to feel I am making some effort, not just for myself, but for the organization as well'</i> ; interviewees' wording considered.
4	I am proud that I am part of this organisation	Item adapted from the British Organisation Commitment Scale (Cook & Wall, 1980): <i>'I am quite proud to be able to tell people who it is I work for'</i> - interviewees' wording considered.
5	I feel as though I belong to my organisation as a whole	Inspired by the interviews
6	I am willing to go the extra mile for my organisation	Inspired by the interviews
7	I find it easy to identify with my organisations' norms and values	Inspired by the interviews
8	I have a good understanding and participation in the whole	Inspired by the interviews

**5.3.1.2. Cognitive well-being dimension (8 items)**

The eight items generated for this sub-dimension were based on the cognitive weariness construct, as Van Horn et al. (2004) defined it. According to Van Horn et al. (2004), cognitive weariness refers to the degree to which individuals have the capacity to firstly take up new information, and secondly concentrate at work. Thus, five out of the eight developed items mirrored the characteristics of e-working practices which had an impact

on individuals' concentration and taking new information, as suggested by the interviewees in Chapter 4. These characteristics concerned receiving emails and constant messages, the need to be constantly available to people, and working from differing locations, other than a traditional office environment. An example item is '*I struggle to concentrate when I am working in locations other than the office*'. Previous literature indicated the relevance of these items as remote e-workers were found to be prone to interruptions deriving from both family and work (Sherryl & Salvador, 2002; Leonardi et al. 2010). In addition, a generic item was generated to capture individuals' overall tiredness and weariness, as it was proposed by the conducted interviews (i.e., '*My job makes me feel very tired and weary*'). Lastly, reviewing Van Horn et al.'s (2004) cognitive weariness scale resulted in the development of two additional items. These two items were re-worded, using interviewees', in Chapter 4, wording (see Table 5.5. for the exact items and their source). In line with the previous sub-scales, a 5-point Likert scale (from *Almost never* to *Very frequently*) would be used.



Table 5.5.

*Items developed for the cognitive weariness dimension*

No	Item	Source of the item
1	I struggle to concentrate when I am working in locations other than the office	Inspired by the interviews conducted by the PhD researcher according to which some people need their office environment to stay focused, as home may involve many other interruptions.
2	I find it hard to concentrate when I receive too many emails and instant messages from colleagues	Inspired by interviews suggesting that remote e-workers are prone to interruptions.
3	I struggle to take up new information when I am constantly available to people	Inspired by interviews suggesting that it may be demanding being constantly available to people.
4	I find it easy to take up new information when I can choose the right place for the right job task (R)	Inspired by interviews suggesting that remote e-workers are prone to interruptions which may impact on their ability to take up new information.
5	I do not let emails and instant messages reduce my concentration (R)	Inspired by interviews suggesting that emails and instance messages may have an impact on concentration levels.
6	My job makes me feel very tired and weary	Inspired by the interviews conducted by the PhD researcher
7	I find it easy to concentrate on my work activities (R)	Adapted from Van Horn et al. (2004): <i>'I have trouble concentrating'</i> .
8	I find it easy to take up new information when I am working on a job task (R)	Adapted from Van Horn et al. (2004): <i>'I have trouble taking up new information'</i>

#### **5.3.1.3. Social well-being dimension (23 items)**

In order to capture the social well-being dimension items for three distinct sub-scales were developed, namely: relationships with colleagues, relationship with supervisor, and social isolation.

##### **5.3.3.1. Relationships with colleagues (8 items)**

The eight items developed that to assess the remote e-workers' relationships with colleagues were, in their majority, inspired by the interviews conducted by the PhD researcher (see Table 5.6.). Particularly, six of the items considered vital elements of good working relationships when e-working remotely, as suggested by interviewees. These vital elements were the sufficient amount of face-to-face interaction, the quality of social interaction, good communication regardless work location, along with the presence of a supportive network. The review of existing measures supported the developed items and further enriched the scale as two additional items were developed. One item was, thus, adapted from Karasek's (1998) social support measure (see Item No 8, Table 5.6.) reflecting the importance of connecting with colleagues, especially when face-to-face talk is not possible (see Chapter 4). Lastly, one item was adapted from Seers' (1989) team-member exchange quality measure, acknowledging the different locations that e-workers work from. Participants would be asked to rate their level of agreement, on a 5-point Likert scale (from *Strongly disagree* to *Strongly agree*).

Table 5.6.

*Items developed for the relationships with colleagues sub-dimension*

No	Item	Source of the item
1	I do not feel as if there is a barrier between my office-based colleagues and me when we are based in different locations	Developed from qualitative interviews.
2	I am happy with the amount of face-to-face contact I have with my colleagues	Developed from qualitative interviews.
3	I am happy with the quality of my social interactions with colleagues	Developed from qualitative interviews.
4	I have a supportive network of colleagues with whom I can discuss work-related topics	Developed from qualitative interviews.
5	My colleagues and I have a good communication regardless of where we are located	Developed from qualitative interviews.
6	I have good ongoing relationships with my office-based colleagues regardless of the time we spend away from each other	Developed from qualitative interviews..
7	My colleagues pay attention to my job problems and needs regardless of our location	Adapted from by Seers' (1989) team-member exchange quality measure item: <i>'My co-workers understand my job problems and needs'</i> . The importance of the location was outlined to adjust this item to the remote e-working population.
8	I find it easy to exchange ideas and connect with my colleagues	Adapted from social support scale (Karasek 1998) <i>'In my job, it is easy to talk to my colleagues'</i> . The idea of connecting with colleagues was prominently discussed in the interviews conducted by the PhD researcher too.

#### **5.3.3.2. Relationship with supervisor (7 items)**

For this sub-scale, seven items were devised to assess, on a 5-point Likert scale (from *Strongly disagree* to *Strongly agree*), the relationship individuals had with their supervisors when e-working remotely. Five out of the seven items were predominantly inspired by the interviews conducted by the PhD researcher. They were, in particular, referring to an adequate provision of resources by the supervisor so individuals could complete their job tasks; clear and flexible communication even when working away from a typical office environment, and the development of trusting relationships, regardless of whether individuals are physically present or not. The review of existing measures again enriched the items included. Particularly, the item *'My supervisor understands my problems and needs regardless of whether I am present or not'* was adapted from the item *"How does your manager understand your problems and needs"*; included in the leader member exchange quality measure by Graen et al. (1982b). The element of the work location was, again, added to reflect the nature of remote e-working practices. Lastly, one item was adapted from the supervisory support measure by Van Veldhoven and Meijman (1994). In particular, the item *'In your work, do you feel appreciated by your superior?'* was re-worded to *'My supervisor appreciates and acknowledges the work that I am doing'* maintaining similar wording to the other items developed. Table 5.7. presents all the items and their exact source.

Table 5.7.

*Items developed for the relationship with supervisor sub-dimension*

No	Item	Source of the item
When e-working remotely:		
1	My supervisor adequately supports and provides the necessary resources I need to complete my job tasks	Inspired by the interviews conducted by the PhD researcher where interviewees highlighted the necessity of supervisor providing the necessary resources.
2	My supervisor clearly communicates what is expected of me	Inspired by the interviews conducted by the PhD researcher where employees highlighted how knowing what is expected of them could increase the satisfaction and effectiveness of their supervisory relationships.
3	My supervisor and I have a good relationship regardless of whether I am physically present or not	Inspired by the interviews conducted by the PhD researcher.
4	My supervisor trusts me that I can undertake my job tasks in any location	Inspired by the interviews conducted by the PhD researcher according to which trusting relationships with supervisors become pivotal when e-working remotely.
5	My supervisor and I have a flexible mode of communication ensuring we have reasonable contact	Inspired by the interviews conducted by the PhD researcher, according to which employees want to make sure that they can contact their supervisors when they want.
6	My supervisor understands my problems and needs regardless of whether I am present or not	Adapted from the item ' <i>How does your manager understand your problems and needs</i> ' included in leader-member exchange quality measure (Graen et al. 1982b). The location aspect was added.
7	My supervisor appreciates and acknowledges the work that I am doing	Adapted from Van Veldhoven & Meijman's (1994) subscale of relationship with your superior: ' <i>In your work, do you feel appreciated by your superior?</i> ' This was also in line with the interviews conducted by the PhD researcher.

#### **5.3.3.3. Social Isolation (8 items)**

To assess social isolation eight items were developed. The items would rate how often, on a 5-point Likert scale ranging from *Almost never* to *Very frequently*, individuals felt that working in solitude influenced the degree they felt included in their organisation. Five out of the eight items were predominantly inspired by the interviews (see Chapter 4). In particular, these items were concerned with being forgotten by colleagues and supervisors, being less included in the social activities, being less counted as a valuable team member, and missed face-to-face communication with colleagues. The review of existing measures augmented the devised construct, leading to the development of three additional items. More precisely, two out of the eight items were adapted from Golden et al.'s (2008) professional isolation measure (see Table 5.8., Item No 6 & 7). Both items were re-worded using interviewed remote e-workers' wording. The last item was adapted from Morganson et al. (2010) workplace inclusion measure, embracing the concept of having people around to talk about work and using the wording of interviewed remote e-workers (see Chapter 4).

Table 5.8.

*Items developed for the social isolation sub-dimension*

No	Item	Source of the items
When e-working remotely:		
1	I am not included in social activity at work with colleagues	Inspired by the interviews where remote e-workers expressed the desire to be included in social activities.
2	I feel as if my colleagues are forgetting about me and do not know me well socially	Inspired by the interviews where individuals feared that their colleagues did not really know them socially.
3	I feel that my supervisor forgets about me	Inspired by the interviews where individuals were concerned that their supervisors could occasionally forget about them.
4	I feel I am not always counted as a valuable team member	Inspired by the interviews where individuals expressed how much they valued being team members.
5	Emails and instant messaging makes me miss face-to-face communication with my colleagues	Inspired by the interviews where individuals expressed the desire to communicate in other ways, than electronic means.
6	I have less opportunities to interact with colleagues than I would like	Influenced by both Golden et al.'s (2008) Professional Isolation item: <i>'I miss face-to-face contact with co-workers'</i> and by the interviews.
7	I feel isolated when I am not around my colleagues on a regular basis	Adapted from Golden et al.'s (2008) Professional Isolation item: <i>"I feel isolated"</i> and the interviews.
8	I am often sat on my own without having somebody to bounce ideas off	Adapted from both an item from Morganson et al. (2010) workplace inclusion measure <i>'I have one or more co-workers available who I talk to about day-to-day problems at work (R)'</i> and the interviews.

#### **5.3.1.4. Professional well-being dimension (25 items)**

The professional well-being dimension consisted of three subscales, namely: autonomy, competence, and perceived career development.

##### **5.3.4.1. Autonomy (7 items)**

This sub-scale included seven items which would ask individuals to rate the degree to which they agreed, on a 5-point Likert scale (from *Strongly disagree*, to *Strongly agree*) with statements concerning the autonomy they have to conduct their job role when e-working remotely. Interviewees' narratives inspired the development of four items, according to which individuals felt able to work in an autonomous way, they could choose their work location based on the nature of their work task, working at any given time and any given location. The review of existing measures once again supported embellished the developed construct. In particular, as according to Breugh (1989), individuals' autonomy is reflected in individuals' work methods, objectives, and time scheduling. Consequently, three items from Breugh's (1989) autonomy scale were adjusted to better capture each one of these features of autonomy (see items No 5-7, Table 5.9.). Interviewees' narratives were considered to adjust the wording of these three items. Lastly, reviewing Gajendran et al.'s (2014) autonomy scale, it was also proposed that autonomy around work location is a feature of remote e-workers' autonomy. Table 5.9. presents the exact items developed and their source.



Table 5.9.

*Items developed for the autonomy sub-dimension.*

No	Item	Source of the item
When e-working remotely		
1	I feel that I am enabled to work in an autonomous way	Inspired by the interviews.
2	I have the autonomy to decide which is the right job task to do in the right place	Inspired by the interviews where individuals suggested that they liked choosing their work location, depending on the nature of the task.
3	I have the autonomy to complete my job tasks at any time	Inspired by the interviews.
4	I have the autonomy to decide where to conduct my work activities	Inspired by the interviews.
5	I feel empowered to decide what the best way is to get my job done	Adapted from Breugh's (1989) autonomy item: <i>'I am able to choose the way to go about my job (the procedures to utilise)'</i> . This item refers to work methods. Interviewees' wording was used to adjust this item.
6	I have the ability to negotiate with my supervisor what I am expected to accomplish	Adapted from Breugh's (1989) autonomy item: <i>'I have some control over what I am supposed to accomplish (what my supervisor sees as my job objectives)'</i> . This item refers to objectives. Interviewees' wording was used to adjust this item.
7	I am enabled to prioritise my work tasks	Adapted from Breugh's (1989) autonomy item <i>'I have some control over the sequencing of my work activities (when I do what)'</i> . This item refers to scheduling. Interviewees' wording was used to adjust this item.

#### **5.3.4.2. Professional competence (8 items)**

This 8-item sub-scale of competence would ask participants to rate the extent to which they felt they could deal effectively with work-related issues, regardless their work location, making use of ICTs. A 5-point Likert scale would be used (from *Strongly disagree* to *Strongly agree*). Five, out of the eight, items referred to essential competencies when e-working, as they were suggested in Chapter 4. These competencies were about having the knowledge, skills, and abilities of using ICT, good communication skills even when people are not physically present, self-motivation, self-discipline, and knowledge of own capabilities. In addition, three items were an adaptation of Maslach Burnout Inventory-General Survey's professional efficacy scale (the MBI-General Survey; Schaufeli et al., 1996); with items being re-worded to be more suitable for use among remote e-workers. Table 5.10 presents the entire list of the developed item and their source.

Table 5.10.

*Items developed for the competence sub-dimension*

No	Item	Source of the item
When e-working remotely		
1	Overall, I am competent to do my job	Adapted from the item: <i>'In my opinion, I am good at my job'</i> included in the personal accomplishment scale of the MBI-General Survey.
2	I am meeting my goals and targets, even when I am not physically next to people from my organisation	Adapted from the item: <i>'At my work, I feel confident that I am effective at getting things done'</i> included in the personal accomplishment scale of the MBI-General Survey. The item was reworded to make it more suitable for use among remote e-workers.
3	I resolve work-related issues that may arise by using information and communication technologies (such as emails, calls and instant messages)	Adapted from the item <i>'I can effectively solve the problems that arise in my work'</i> included in the personal accomplishment scale of the MBI-General Survey; considering the interviews.
4	I have the essential IT knowledge, skills and abilities to solve any issues while I am not working in an office environment.	Items from 4 - 8 were inspired by the interviews, where interviewees were called to identify the most essential competencies when e-working remotely
5	I effectively communicate with people even when they are out of my sight	
6	I stay motivated something that helps me to persist towards my goals	
7	I discipline myself to stay focused and get things done	
8	I have a good knowledge of myself and my own capabilities	

Notes. MBI-General Survey (Schaufeli et al., 1996).

#### **5.3.4.3. *Perceived Career Development (10 items)***

It is worth mentioning that, in Van Horn et al.'s (2004) conceptualisation of well-being, the aspiration aspect is included as an integral part of professional well-being. According to researchers' definition, aspired individuals at work would show interest in their working environment, they would be motivated, and they would try to stretch and/or advance themselves professionally. This would, for example, be indicated in setting and pursuing challenging goals. However, considering the finding of the systematic review presented in Chapter 3 (Charalampous et al., 2018), career development and progression can be a more relevant concept to assess within remote e-working populations. This may result from individuals' perception that spending time away from their traditional office environment can affect their career prospects (Cooper & Kurland, 2002). Therefore, instead of generating items relating to aspiration, items concerning career development were generated instead.

In this sub-scale individuals would be asked to rate the degree to which they agree with 10 items describing access to professional development activities, and career opportunities when e-working remotely. Interviewees' narratives (see Chapter 4) inspired four out of the ten items, according to which it is crucial that the organisation enables and offers career opportunities to people who are not constantly in an office location. Additionally, Cooper and Kurland's (2002) qualitative findings inspired six, out of the ten, items, according to which there are specific developmental activities that are fundamental to individuals' perceptions about their career development. These activities include having sufficient network, receiving mentoring and feedback from supervisors, and informal learning. The items would be rated on a 5-point Likert scale ranging from *Strongly disagree* to *Strongly agree*. Table 5.11. presents all the developed items and their source.

Table 5.11.

*Items developed for the career development sub-dimension*

No	Item	Source of the item
When e-working remotely:		
1	I get to meet the people who influence my career	Inspired by Cooper and Kurland's (2002) findings, according to which sufficient network is crucial for remote e-workers' career development.
2	I make myself visible to the right people in the organisation in order to be promoted	Inspired by both Cooper and Kurland's (2002) findings suggesting sufficient network is crucial for remote e-workers' career development and interviewees' claim that being in contact with key people in the organisation can help their progression.
3	I get sufficient mentoring from my supervisor	Inspired by Cooper and Kurland's (2002) findings which suggested that mentoring is crucial for remote e-workers' career development.
4	My supervisor provides me with constructive feedback that I need to develop professionally	Inspired by Cooper and Kurland's (2002) findings and their suggestion that mentoring is crucial for remote e-workers' career development.
5	I feel that I am missing relevant information that may enhance my work-related skills (R)	Inspired by Cooper and Kurland's (2002) findings and their proposal that informal learning is crucial for career development.
6	I feel that I am not receiving important information that can support me in my professional tasks and advancement (R)	Inspired by Cooper and Kurland's (2002) findings and their proposal that informal learning is crucial for career development.
7	I feel that I am receiving all the relevant information about career progression	Items 7 - 10 are inspired by the interviews according to which employees want to be informed about and included in career opportunities for their career development.
8	I feel that I can easily be forgotten regarding career opportunities that come up in my organisation(R)	
9	My organisation is very good in terms of understanding people working out of offices and offering them career opportunities	
10	I am less visible in a way that when new opportunities are coming up my organisation wouldn't immediately think of me (R)	

#### **5.3.1.5. Psychosomatic well-being dimension (13 items)**

For the purpose of this sub-scale consisted, a list of 13 physical health complaints was compiled (see Table 16 below). In this list, it was attempted to include psychosomatic symptoms that are particularly relevant to a remote e-working population. Hence, symptoms mentioned by interviewed remote e-workers (see Chapter 4) were included. One item would refer to stiffness in individuals' muscles and another item to fatigue since these were commonly mentioned symptoms when e-working remotely. A generic item was developed to rate individuals' overall physical health issues. Next, ten items would ask individuals to rate any shoulder pains, pain in the limbs, pain in the upper body, sore joints, neck pains, back pains, tendon pain in the wrists and fingers, discomfort in the eyes, sleeping problems, headaches, and migraines. It is worth mentioning that the compiled list was compared to and supported by existing scales and literature. The compiled list (excluding symptoms of stiffness and fatigue) was in line with the main health concerns that were found to link to remote e-working and the embedded ICT use, as presented by the Eurofound and the ILO (2017) report. In addition, the majority of the symptoms were included to at least one or in some case to both scales of: musculoskeletal load and health complaint (Hildebrandt & Douwes, 1991) and the Physical Symptoms Inventory (Spector & Jex, 1997). Table 5.12. below presents an explicit indication about each symptom and its inclusion in each scale. This sub-scale would, again, be scored on a 5-point Likert scale ranging from *Never* to *Very frequently*.

Table 5.12.

*Items developed for the psychosomatic dimension*

No	Item	Source of the item
When e-working remotely:		
1	My muscles felt stiff	Influenced by the interviews
2	I have suffered from shoulder pains	Symptom mentioned in the Eurofound and the ILO's (2017) report, in Hildebrandt and Douwes's scale (1991) and the interviews
3	I suffered from pain in my lower limbs such as feet, thighs and hips	Symptom mentioned in the Eurofound and the ILO's (2017) report, in Hildebrandt and Douwes's scale (1991) and the interviews
4	I had pain in the upper body such as forearms and elbows	Symptom mentioned in the Eurofound and the ILO's (2017) report, in Hildebrandt and Douwes's scale (1991) and the interviews
5	My joints felt sore	Symptom mentioned in the Eurofound and the ILO's (2017) report and the interviews
6	I experienced neck pains	Symptom mentioned in the Eurofound and the ILO's (2017) report, in Hildebrandt and Douwes's scale (1991) and the interviews
7	I experienced back pain	Symptom mentioned in the Eurofound and the ILO's (2017) report, in Hildebrandt and Douwes's scale (1991), in the Physical Symptoms Inventory by Spector and Jex (1997) and the interviews
8	I experienced tendon pain in the wrists and fingers	Symptom mentioned in the Eurofound and the ILO's Office's (2017) report and the interviews
9	I experienced discomfort in my eyes (e.g., sore, tired or dry eyes)	Symptom mentioned in the Eurofound and the ILO's (2017) report and the interviews
10	I had problems with my sleep	Symptom included in the European Commission's report (2010), in the Physical Symptoms Inventory by Spector and Jex (1997).
11	I felt very tired and/or fatigued	Symptom mentioned in the interviews and in the Physical Symptoms Inventory by Spector and Jex (1997).
12	I had constant headaches and/or migraines	Symptom included in the Eurofound and the ILO's (2017) report, in the Physical Symptoms Inventory by Spector and Jex (1997) and the interviews
13	Overall, I have experienced physical health issues	Generic item

A noteworthy point at this stage is that in all instructions, employees would be asked to rate how frequently they experience what the statements describe or how much they would agree with them by specifically considering the days that they are e-working remotely.

### **5.3.2. Item evaluation and reduction based on experts' item rating and feedback.**

Once the supervision team agreed on this 109-item version of the E-Work Well-being scale (see Appendix H), this was sent over to three independent subject experts, located in different Universities, for review. The review aimed at further examining items' relevance to the well-being constructs within a remote e-working population; showing their content validity. At last, two experts scored the measures with the third suggesting changes only. The expert providing a more general feedback on the scale is a Chartered and Registered Occupational Psychologist, Senior Lecturer and Director of the Well-being at Work Research Centre, with a specific interest in work email and well-being. The other two experts who independently rated and commented on each individual item (providing generic feedback on the scale too) are both professors with broad experience in Health and Organisational psychology. Thus, their review brought established expertise and insight into the project and scale items.

In particular, the subject experts were asked to rate items' relevance on a 5-point Likert scale (from *Not relevant at all* to *Fully relevant*). They were also asked to identify any problematic wording, suggesting alternative ways of phrasing the items, as well as, to provide general comments on the items and/or the scale itself (Appendix H). As Appendix H shows, experts were provided with all the definitions of the constructs and the precise source of the items. Additionally, it was clearly identified the definition used for a typical remote e-worker:



*“Employees who are spending at least one day per week away from their head office location (i.e., working from home, hotel, train, and cafes); using any type of Information and Communication Technology (ICT) to stay connected to their working environment.” (Charalampous et al. 2018).*

The main aspects of this definition are firstly the distance individuals have from colleagues, as a result of working at a remote location, and secondly the ICT use embedded in their work, as this often becomes the key mean of communication.

Intraclass correlation coefficient (ICC) was calculated to assess raters agreement, but this was only based on 2 out of the 3 reviewers. When the two experts' ratings were collated, the ICC was calculated to assess the interrater agreement. Interrater reliability was expected to indicate the degree to which experts' item rating varied (Koo & Li, 2016). Taking into consideration that an ICC value of 1 suggests a perfect agreement and a value of 0 suggests a random agreement, Koo and Li (2016) proposed that: an ICC score lower than .50 shows a poor interrater agreement, a score between .50 and .75 shows a moderate agreement, a score between .75 and .90 shows a good agreement, and lastly a score greater than .90 shows an excellent agreement. Data were, then, analysed using IBM SPSS Statistics 25. When it comes to the “Model” selection, a 2-way mixed-effects model was chosen as appropriate firstly because the sample of raters was specific, and secondly because there was no plan to generalize their scores to a larger population of raters (Shrout & Fleiss, 1979). Moreover, an absolute agreement measure was defined because, as according to Koo and Li (2016), it is essential that there is an agreement between repeated measurements.

The analysis, therefore, suggested that there was a moderate agreement between the two raters: ICC = .52 with 95% confidence interval = .31-.66. Although a greater agreement would be optimal, some degree of agreement is still indicated. One of the

reasons of not considering this moderate agreement as problematic was that this version of the scale was long; something that allowed the deletion of items about which raters greatly disagreed. Also, it is worth mentioning that both experts commented extensively on the items and in many cases suggested alternative wording which guided researcher's decision about deleting, keeping, or improving the items. As an additional metric of items' relevance, average scores for each item were calculated. More precisely, items which had a relevance score lower than 2.5 (i.e., scale central score) were deleted. The only exception, though, was in relation to the emotions dimension. More precisely, the emotions of feeling "proud" and "guilt" were kept as they were suggested to be relevant to remote e-working population in the interviews.

Hence, considering experts' feedback and ratings, a further reduction of the items occurred resulting in a final sample of 74 items (Appendix I). This final sample of items was extensively discussed and agreed between the members of the research team.

#### **5.4. Conclusion**

This chapter presented and further developed the items for the E-Work Well-being (EWW) scale, drawing upon the systematic review findings presented in Chapter 2 and the qualitative findings presented in Chapter 4. Validated measures were also reviewed to ensure that the developed items adequately captured the latent variables' aspects. Experts' evaluation of the items led to a reduced version of 74-item and confirmed scale's face and content validity (see Appendix I). As a next step, the shorter version of the scale was further reviewed in a pilot study. This pilot study enabled descriptive, correlational, and preliminary analyses, which led to the construction of a final version of the EWW scale, and it is going to be presented and discussed in the following chapter (Chapter 6).

## **Chapter 6: Pilot study to provide initial validation of the E-Work Well-being scale.**

### **6.1. Overview**

The current chapter will present the findings of a pilot study, which aimed to assess the psychometric properties of the E-Work Well-being scale (EWW scale; 74-item version). Exploratory Factor Analysis (EFA) and Exploratory Structural Equation Modeling (ESEM) were conducted in Mplus, to explore both sub-dimensions independently and EWW scale's overall factor solution. It was examined whether factors are aligned with the theoretically proposed dimensions. This analysis is aiming to provide an initial exploration of the factorial structure of the EWW scale and its alignment with Van Horn et al. (2004) model; informing potential amendments to the scale and identifying any problematic items. Correlations between the sub-dimensions and already existing measures were investigated to examine the scale's construct and criterion-related validity. The current chapter focuses on the EWW scale initial exploration and validation, and following steps in the scale development process (see Chapter 3 for a more detailed expansion of the steps).

**Step five:** Consideration of inclusion of validation items.

**Step six:** Administration of items to a development sample.

**Step seven:** Evaluation of the items.

The E-Work Life (EWL) scale was not included in the pilot study as preliminary validity checks had already been completed (see Grant et al. 2019). The EWL scale forms part of the main study to further validate the measure on a large sample enabling CFA to be completed.

## **6.2. Introduction**

### **6.2.1. Evaluation of the conceptual definition for the EWW scale.**

As it has been thoroughly discussed throughout the present thesis, well-being at work has been conceptualised as a domain-specific (e.g., work-related well-being) and a multidimensional concept (Taris & Schaufeli, 2015). This approach has been argued and justified considering previous research suggesting a multifaceted impact of remote e-working on individuals. Therefore, the definition of well-being at work provided by Van Horn et al. (2004) was used. As illustrated by the Figure 1.1. (p. 10), Van Horn et al.'s (2004) model of well-being at work encompasses five dimensions, which in turn, reveals 13 distinct constructs (i.e., positive emotions, negative emotions, emotional exhaustion, organisational commitment, job satisfaction, cognitive weariness, relationships with colleagues, relationship with supervisor, social isolation, autonomy, career development, competence, and psychosomatic symptoms). Findings related to the impact that remote e-working may have on individuals' well-being at work have often been contradictory and ambiguous (Charalampous et al. 2018). It is, thus, expected that creating a scale under this approach will have high explicative and predictive value, since the developed items will be highly related to the domain of operation under study, including all of the aspects of well-being within remote e-workers that should be measured.

### **6.2.2. Exploration and initial validation of the EWW scale (74-item version)**

The pilot study described in this chapter enabled conducting factor analysis of the EWW scale. In particular, EFA conducted focused on identifying the underlying latent variables among a group of indicators (i.e., items), by investigating their observed relationships (Brown & Moore, 2012; see Chapter 3 for a greater expansion on EFA). By assessing the size and magnitude of the factor loadings EFA can determine which items are good

indicators of the yielded latent dimensions (Brown & Moore 2012). ESEM was also conducted to provide a first exploration of the hypothesised well-being at work model.

### **6.3. Research Rationale and Hypotheses**

#### **6.3.1. Assessing the distinct well-being constructs and the multi-dimensional model.**

Similarly to Van Horn et al.'s (2004) conceptualisation, the EWW scale proposed that remote e-workers' well-being will manifest itself in five dimensions, including the 13 distinct constructs outlined above. Taking into account that the EWW scale is newly developed and that the dimensions and sub-dimensions are explored for the first time, the analysis aimed to identify and explore all the 13 constructs individually. This would, then, reveal any problematic items and issues within each particular construct; eliminating any interactions between the items of different sub-dimensions. This strategy is also aligned with DeVellis' (2016) proposition, according to which, even when the constructs of interest are multi-dimensional, then unidimensional item groupings are still expected to be present and can be treated individually. Therefore, the present pilot study aims to explore whether the developed items will be good indicators of the yielded latent dimensions, revealing the 13 distinct constructs of *positive emotions*, *negative emotions*, *emotional exhaustion*, *organisational commitment*, *job satisfaction*, *cognitive weariness*, *relationships with colleagues*, *relationship with supervisor*, *social isolation*, *autonomy*, *career development*, *competence*, and *psychosomatic symptoms* (**Hypothesis 1**). Notwithstanding this being a very exploratory phase, where CFA is not appropriate to check best structure (this analysis is conducted in Chapter 7), ESEM analyses can still provide an initial exploration of well-being model's structure. Thus, this pilot study aims to explore an oblique 13-factor model where the factors correlate freely (**Hypothesis 2**).

### **6.3.2. The relationship between the EWW scale and validated measures to examine construct and criterion-related validity.**

The correlation patterns among the (sub)dimensions of the newly devised EWW scale and a set of related constructs have been examined to provide evidence of construct validity. Simultaneously, performed regressions allowed to investigate whether the EWW scale can predict outcomes for other independent measures, something that can then support scale's criterion-related validity (DeVellis, 2016; Hinkin, 1995). The following sections offer details about specific hypotheses and the rationale supporting them.

#### ***6.3.2.1. Establishing construct validity for the affective dimension***

Previous research suggested that positive mental health is strongly associated to affectivity (Diehl, Hay, & Berg, 2011). It has been proposed that the intercourse between positive and negative affect that individuals experience contributes to their subjective well-being and impacts upon their flourishing in life (Larsen & Prizmic 2008). On the contrary, psychological distress includes a set of psychological symptoms linked to anxiety and depression, and their physiological impact to individuals; without these symptoms be linked to any particular pathology (Ross et al., 1990). Employees who experienced great levels of psychological distress were found to also report greater levels of presenteeism (Hilton et al. 2008a) and were likely to be less satisfied with their job (Voydanoff & Donnelly, 1999). Overall, researchers have suggested that individuals who are psychologically distressed may be less happy, and less fulfilled than others (Steptoe, O'Donnell, Marmot, & Wardle 2008).

In addition, work-related rumination, as it has been defined by Cropley, Michalianou, Pravettoni, and Millward (2012), refers to the way that individuals think about work. The researchers suggested that there are three forms of ruminative thinking: affective rumination, problem solving pondering, and detachment. For the purposes of

this study only the detachment rumination was explored; which refers to respondent's ability to switch-off and leave work behind. Research has suggested that being able to detach from work was strongly and negatively correlated with individuals' positive affectivity (Cropley et al., 2012; Michailidis & Cropley, 2017).

The following hypotheses will be investigated:

*Positive mental health* will be positively correlated with *positive emotions*, *job satisfaction*, and *organisational commitment*; and negatively correlated with *negative emotions*, and *emotional exhaustion* (**Hypothesis 3**).

*Psychological distress* will be negatively correlated with *positive emotions*, *job satisfaction*, and *organisational commitment*; and positively correlated with *negative emotions*, and *emotional exhaustion* (**Hypothesis 4**).

*Detachment from work* will be positively correlated with *positive emotions*, *job satisfaction*, and *organisational commitment*; and negatively correlated with *negative emotions*, and *emotional exhaustion* (**Hypothesis 5**).

Moreover, it is anticipated that:

*Overall job satisfaction* will be positively correlated with *job satisfaction* relating to remote e-working (**Hypothesis 6**).

This is due to the fact that both constructs refer to individuals' satisfaction levels with their job; with the difference being that the newly devised construct focuses on the specific elements introduced by remote e-working. This is equally expected to be the case for the *organisational commitment* newly devised construct. It is anticipated that:

*Overall organisational commitment* will be positively correlated with *organisational commitment* experienced when e-working remotely (**Hypothesis 7**).

#### **6.3.2.2. Establishing criterion-related validity for the affective dimension**

Sleep problems have been categorised as a psychological symptom of occupational stress (Quick, Horn, & Quick, 1987). These problems were found to be associated with specific work conditions such as: working above normal hours (Rau & Triemer, 2004), great fatigue after work and low levels of work pleasure (Kompier, Taris, & Van Veldhoven, 2012). Based on strong evidence suggesting that the quality of sleep tightly links to affect (Scott & Judge, 2006; Sonnentag, Binnewies, & Mojza 2008) it is expected that:

*Sleep problems* will be predicted by lower levels of *positive emotions*, *job satisfaction*, and *organisational commitment*; and greater levels of *negative emotions* and *emotional exhaustion* (**Hypothesis 8**).

#### **6.3.2.3. Establishing construct validity for the cognitive dimension**

Individuals who could not stop thinking about work and, in turn, found it difficult to psychologically detach from it (Kinnunen, Feldt., Sianoja, de Bloom, Korpela, & Geurts, 2017), struggled to recover and reported greater fatigue and strain (Rook & Zijlstra, 2006). It is, thus, anticipated that:

*Detachment from work* will be negatively correlated with *cognitive weariness* (**Hypothesis 9**).

#### **6.3.2.4. Establishing criterion-related validity for the cognitive dimension**

In addition, Kompier, Taris, and Van Veldhoven (2012) supported that work-related rumination, or in other words less switching-off from work, was a very strong predictor of low sleep quality. In other words, individuals who are constantly thinking about work, something that can make them feel cognitively weary, are likely to have greater sleep problems. Hence, it is hypothesised that:

*Sleep problems* will be predicted by *cognitive weariness* (**Hypothesis 10**).



#### **6.3.2.5. Establishing construct validity for the social dimension**

The social support as assessed by Undén et al. (1991) explores individuals' perceived workplace social support concerning both their relationships with colleagues and the atmosphere at the workplace. Since the social dimension included in the EWW scale also reflects working relationships with colleagues and supervisors, indicating whether these individuals feel isolated or not, it can be suggested that these constructs do share common theoretical grounds. It is, thus, expected that:

*Social support* will positively correlate with better *relationships with colleagues* and *supervisors*, and negatively correlate with *social isolation* (**Hypothesis 11**).

#### **6.3.2.6. Establishing criterion-related validity for the social dimension**

It has been proposed that the social isolation individuals experience as well as negative social interactions in general can be detrimental to individuals' sleep (Steptoe et al., 2008). For instance, in a sample of 227 working men and women, it was found that individuals who dealt with life stressors, in combination with low emotional support, and less social connectedness reported grater issues with their sleep (Steptoe & Marmot, 2003). It is thus anticipated that:

*Sleep problems* will be predicted by worse *relationships with colleagues* and *supervisors*, as well as *social isolation* (**Hypothesis 12**).

#### **6.3.2.7. Establishing construct validity for the professional dimension**

Schwartz (1993) suggested that self-efficacious individuals perceive themselves as capable to perform at desired levels, which can then have an impact on their lives and their reaction to events. The concept of competence, as it has been developed for the current EWW scale, refers to the degree to which individuals deal with problems in an at least moderate successful way, indicating potential theoretical links between the self-efficacy and competence constructs. Individuals who perceived themselves to be self-

efficacious in their daily work also reported greater levels of job autonomy (Van Mierlo, Rutte, Vermunt, Kompier, and Doorewaard, 2006) approaching their career development in a more positive way (Maurer, 2001).

*Self-efficacy* will be positively correlated with *autonomy*, *competence*, and *perceptions of career development* (**Hypothesis 13**).

#### **6.3.2.8. Establishing criterion-related validity for the professional dimension**

It has been proposed that the lack of autonomy and obstacles in career development can fit under the umbrella of workplace stressors (Colligan & Higgins, 2006). Colligan and Higgins (2006) proposed that the modern working environment and its technological changes, can reduce individuals' job security and in some cases restrict individuals' opportunity to thrive or to be creative. This can have a detrimental impact on individuals' well-being. More precisely, in their study, Steptoe et al. (2008) also proposed that autonomy (as part of the eudaimonic construct by CASP-19; Hyde, Wiggins, Higgs, & Blane 2003) was inextricably linked to individuals' sleep quality. It is anticipated that:

*Sleep problems* will be predicted by *autonomy*, *competence*, and *perceptions of career development* (**Hypothesis 14**).

#### **6.3.2.9. Establishing construct validity for the psychosomatic dimension**

Positive mental health was found to be associated with individuals' physical/psychosomatic health (Taris, Schreurs, & Van Iersel- Silfhout, 2001). For example, the stress experienced in a teachers' population was linked not only to mental ill-health (Sheffield et al., 1994) but also to poor physical well-being (Burke et al., 1996). It is, thus, expected that:

*Positive mental health* will be negatively correlated with *psychosomatic* (**Hypothesis 15**).

#### **6.3.2.10. Establishing criterion-related validity for the psychosomatic dimension**

Semi-structured interviews conducted in Chapter 4, suggested the extensive use of technology, linked to prolonged sitting, might exasperate remote e-workers' psychosomatic well-being. This is something that has not been sufficiently explored within remote e-working populations (Allen et al., 2015; Eurofound and the ILO, 2017). Additionally, the interviewees discussed how extensive driving might be associated with exasperation of physical health. Irrespective this being assessed in a general population (Crawford et al. 2011), it has not been satisfactorily examined within remote e-working populations (Charalampous et al. 2018). In addition, a very recent review has also claimed that very little research has been conducted about health and safety issues and ergonomics of remote workspaces and how they may relate to individuals' psychosomatic conditions (Charalampous et al. 2018). Yet, as indicated in the Eurofound and the ILO (2017) report, data from Finland in 2014 showed that more than half of the individuals had not paid any attention to ergonomics (health and safety risks) of their working environment, neither had proper office chair or a working desk at home. Surprisingly, 94% of the employees mentioned that their organisation had not paid any attention in the health and safety risks of their e-working environment. Research has shown that chairs that lack proper lumbar support, improper monitor and keyboard height, mouse position, no or hard armrests, and reliance on laptop keyboards can all contribute to musculoskeletal disorders (Dennerlein & Johnson, 2006; Ellison, 2012; Garza, Catalano, Katz, Huysmans, & Dennerlein, 2012). It was, therefore, hypothesised that:

The greater *technology use* will predict higher levels of *psychosomatic symptoms*.  
(Hypothesis 16).

*Long hours driving* will predict higher levels of *psychosomatic symptoms*  
(Hypothesis 17).

Less attention to remote workstation (*Health and safety issues/ ergonomics*) will predict *psychosomatic symptoms* (**Hypothesis 18**).

## **6.4. Method**

### **6.4.1. Design**

For the purposes of this pilot study, an online cross-sectional survey lasting approximately 25 minutes was used to collect data. The variables collected were the newly devised EWW scale and relevant existing validated scales concerning or being related to well-being such as psychological distress, sleeping problems, detachment from work (see 6.3.4. Section: Materials/Measures for more information). Demographic information such as gender, age, work tenure were also collected (see Table 6.1. for more details).

### **6.4.2. Procedure**

The link to the survey was disseminated to wide range of employees living in the U.K. The snowball sampling method was used. This method does not allow for a calculation of the response rate, as researchers' ability to scrutinize the qualifications of the recruited sample is limited (Dusek, Yurova, & Ruppel, 2015). However, to address this issue, rich socio-demographic information about the sample was collected, such as current occupation, and work status (see Appendix K for additional information). The survey was advertised through social media (e.g., LinkedIn, Twitter) and researchers' networking contacts. In addition, to increase participants recruitment, HR managers of organisations were approached making use of a Gatekeeper letter (see Appendix J). Once the nature and purpose of the study was explained, HR practitioners were asked to share the survey link with their staff and encourage them to take part. Participants, who considered themselves eligible to participate and used the survey link, were presented with relevant information about the study and had to declare their consent to take part (see Appendix J for the Participant Information Sheet and Consent Form). Once they have completed the

survey, individuals were offered the opportunity to enter into a competition to win one of the four £25 AMAZON vouchers. Participants were informed that they had the right to withdraw their answers, at any point, without a given reason during the study, or for a short period after the study was completed (i.e., two weeks after participation). They were also made aware that their organisation or supervisors would not get to see their individual responses, who could get access to the aggregated results on demand. Their answers were held anonymously online in password-protected files. Participants were debriefed at the end of the study (see Appendix J). The data collection lasted for approximately five months. The current pilot study was granted with ethical approval from Coventry University Ethics Committee to which the PhD research team affiliated (see Appendix J for Ethics certificate and Appendix K for the pilot study online survey).

#### **6.4.3. Participants**

In total, 202 U.K. employees were recruited. Participants had a mean age of 37.77 ( $SD = 11.14$ ) and 156 (77.2%) of them were female. The three most often reported occupations were teaching and education (22.3%), research and science (18.8%), and other (10.4%). Table 6.1. displays a more detailed representation of occupations in the sample. Furthermore, the mean years of e-working remotely was 3.53 ( $SD = 4.22$ ) in individuals' current organisation and 5.16 years ( $SD = 4.84$ ) in their overall career. On a 5-point Likert scale (1 = never to 5 = very frequently /all the time), individuals indicated highly frequent use of ICT for work purposes; both during normal hours ( $M = 4.80$ ,  $SD = .50$ ) and outside hours ( $M = 4.32$ ,  $SD = .77$ ). Individuals spent on average 2.46 hours ( $SD = 3.93$ ) per week commuting by public transport and 4.17 hours ( $SD = 6.43$ ) driving for work purposes. The main office was the most commonly cited work location ( $M = 19.01$ ,  $SD = 14.90$ ); followed by employees' homes ( $M = 16.80$ ,  $SD = 36.20$ ). Table 6.1. presents all the demographic information about this remote e-working population.

Table 6.1.

*Demographic information for the pilot study.*

<b>Gender</b>	Male	45	22.3%
	Female	156	77.2%
	Other	1	.5%
	<b>Overall</b>	<b>202</b>	
<b>Age</b>	$M = 37.77$	$SD = 11.14$	
<b>Marital Status</b>	Single	44	21.8%
	Married/ Civil Partnership	85	42.1%
	Divorced	14	6.9%
	Widowed	1	.5%
	Cohabiting	34	16.8%
	In a relationship	24	11.9%
<b>Dependent children</b>	0	154	76.2%
	1	24	11.9%
	2	17	8.4%
	3	6	3%
	4	1	.5%
<b>Job level</b>	Senior management	19	9.4%
	Middle-level management	40	19.8%
	First-level management	25	12.4%
	Non-management	118	58.4%
<b>Basis of employment</b>	Full-time	127	62.9%
	Part-time	29	14.4%
	Self-employed	17	8.4%
	Full-time student	24	11.9 %
	Part-time student	5	2.5%
<b>Occupation</b>	Teaching and education		22.3%
	Research/science		18.8%
	Other		10.4%
	Healthcare		9.9%
	Business, consulting, and management		8.4%
	Accounting, banking, and finance		4.0%
	Engineering and manufacturing		2.5%
	Marketing, advertising and PR		2.5%
	Energy and utilities		2.5%
	Social care		2.5%
	Recruitment and HR		2.0%
	Property and construction		2.0%
	Sales		2.0%
	Information technology		2.0%
	Environment and agriculture		1.5%
	Law		1.5%
	Charity and voluntary work		1.5%

	Retail		1.0%
	Leisure, sport and tourism		1.0%
	Hospitality		1.0%
	Media and publishing		0.5%
<b>Work extra hours</b>	Yes	161	79.7%
	No	41	20.3%
<b>Organisational tenure (in years)</b>	$M = 4.71$	$SD = 5.91$	
<b>Overall work tenure (in years)</b>	$M = 16.43$	$SD = 12.06$	
<b>Using ICTs during normal hours</b>	$M = 4.80$	$SD = .502$	
<b>Using ICTs outside normal hours</b>	$M = 4.32$	$SD = .773$	
<b>Hours per week commuting by public transport</b>	$M = 2.46$	$SD = 3.94$	
<b>Remote e-working for this organisation</b>	$M = 3.53$	$SD = 4.22$	
<b>Remote e-working overall</b>	$M = 5.14$	$SD = 4.84$	
<b>Work location</b>	Hours working from the main office ( $N = 202$ )	$M = 19.01$	$SD = 14.90$
	Hours e-working from home ( $N = 202$ )	$M = 16.80$	$SD = 36.21$
	Hours e-working from a satellite office site ( $N = 202$ )	$M = 1.23$	$SD = 4.88$
	Hours e-working from a client office site ( $N = 202$ )	$M = 1.40$	$SD = 4.63$
	Hours e-working from public transport) ( $N = 202$ )	$M = .86$	$SD = 2.34$
	Hours e-working from other locations such as hotels and cafes ( $N = 202$ )	$M = 1.32$	$SD = 3.11$
<b>Looking to move to another role</b>	$M = 3.42$	$SD = 1.43$	
<b>Days off-work the last 12 months</b>	$M = 5.92$	$SD = 31.35$	

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#### **6.4.4. Exclusion/Inclusion criteria**

No pre-selection of participants took place. However, the volunteered participants were asked to complete the survey only if they were eligible against a remote e-working definition provided, that was: ‘spending at least a portion of your working time away from your head office (no matter if this is home, another site of the company, hotel or train; making use of technology to stay connected to your workplace; Charalampous et al. 2018)’. Although the specific amount of time individuals spent working away from their typical workplace was not a criterion, this can be observed in the demographic information provided by the participants.

#### **6.4.5. Materials/Measures**

In addition to the 74-items E-Work Well-being (EWW) scale (see Appendix I), the following measures were included in the survey.

Overall *job satisfaction* has been examined using two single items: one assessing overall job satisfaction (Caillier, 2012) and one assessing satisfaction when e-working remotely (O'Neill, Hambley, Greidanus, MacDonnell, & Kline, 2009). Participants were required to rate how satisfied they were, on a 5-point Likert scale (from *Not at all* to *To a large extent*) they were with their jobs by considering everything (i.e. their job's content, colleagues, supervisors, and working conditions).

*Organisational commitment* has been examined using two items: one measuring overall organisational commitment (Kırmızı, & Deniz, 2012), and one measuring commitment when e-working remotely. A 5-point Likert scale (from *Not at all* to *To a large extent*) was used.

*Positive mental health* was measured using the Short Warwick-Edinburgh Mental Well-being Scale (SWEMWBS) which is a 7-item shortened version of the Warwick-Edinburgh Mental Well-being Scale (WEMWBS; Stewart-Brown et al., 2009). Since



SWEMWBS covers positive affect, psychological functioning, and includes concepts of hedonic and eudemonic well-being (Tennant et al., 2007), all seven items of the scale are positively worded. Respondents had to rate the level to which the statements described their feelings and thoughts in the last 2 weeks on a 5-point Likert scale (from *None of the time* to *All of the time*). An example item was *'I've been feeling optimistic about the future'*. A strict unidimensionality of the scale and good internal construct validity have been confirmed, as well as a good level of reliability (Cronbach's alpha = 0.85; Stewart-Brown et al., 2009). The scale has also been used within an organisational setting (e.g., Gilchrist, Brown, & Montarzino, 2015).

*Psychological distress* was measured using the 6-item scale, named Kessler 6 (K6; Kessler et al. 2002), which was created to assess anxiety symptoms and mood disorders, in the US National Health Interview Survey (NHIS). Respondents had to rate how often they experienced what the statements described, during the last 30 days, on a 5-point Likert scale (from *None of the time* to *All of the time*). An example item was: *'During the last 30 days, about how often did you feel so depressed that nothing could cheer you up?'* Kessler et al.'s (2002) findings indicated that the K6 scale had very good internal consistency reliability (Cronbach's alpha = 0.89). The scale has been used within working populations too (e.g., Hilton, & Whiteford, 2010).

*Sleep's quality*, and particularly insomnia problems, was measured using the 7-item Insomnia Severity Index (ISI) by Morin (1993). Individuals had to rate their sleep problems on a 5-point scale (from *Not at all* to *Extremely*), within the last 2 weeks. An example item is *'How worried/distressed are you about your current sleep problem?'*. Bastien et al.'s (2001) findings showed that ISI has adequate internal reliability (Cronbach's alpha = .78).

*Detaching from work* was measured using the Work-related Rumination Questionnaire (WRPQ), as developed by Cropley, Michalianou, Pravettoni, and Millward (2012). In the WRPQ questionnaire respondents have to rate the way they think about work, on a 5- point Likert-scale (from *Very seldom or never* to *Very often or always*). This measure has 15 items and consists of four subscales: ruminative thinking, affective rumination, problem-solving pondering, and detachment. For the purposes of this survey, only the detachment rumination subscale was used, which refers to respondent's ability to switch-off, and leave work behind. An example item was '*Do you feel unable to switch off from work?*'. The detachment sub-scale has been found to have high reliability with Cronbach's alpha = .86 (Cropley et al., 2012).

*Health and safety issues (i.e., ergonomics)* when individuals are e-working remotely, was measured using a 10-item scale developed by the PhD researcher (see Appendix L for all items and their source). The items reflected the fact that some individuals do not pay attention to ergonomics (health and safety risks) of their working environment, neither their organisation (Eurofound and the ILO, 2017). Individuals were asked to consider the health and safety issues relating to the places that they are performing work, outside a head office environment, both at an individual level: '*I do not pay attention to health and safety issues while doing my job tasks*' and at an organisational level '*My organisation does not consider health and safety issues of the location(s) I am working at*'. In addition, developed items aimed to investigate whether individuals had chairs that with proper lumbar support, working desks, as well as whether they adjusted the position of the monitor, and their seated position. These elements were found to contribute to musculoskeletal disorders (Ellison, 2012; Garza, Catalano, Katz, Huysmans, & Dennerlein, 2012). A 5-point Likert Scale (from *Strongly disagree* to *Strongly agree*) was used.

*Self-efficacy* was assessed using the 10-item General Self-Efficacy scale developed by Schwarzer and Jerusalem (1995). Respondents rated the degree to which they dealt with daily difficulties at work on a 5-point Likert scale (from *Strongly disagree* to *Strongly agree*). An example item was '*I can always manage to solve difficult problems if I try hard enough*'. Collected data by Scholz, Doña, Sud, and Schwarzer (2002) across 25 countries confirmed scales' homogeneity and unidimensionality as well as its reliability (Cronbach's alpha ranging from .75 to .91).

*Social support* was measured using Undén et al.'s (1991), 5-item, Social Support in the Workplace scale. Individuals were asked to rate their perceived workplace social support concerning both their relationships with colleagues and the atmosphere at the workplace, on a 5-point Likert scale (from *Strongly disagree* to *Strongly agree*). An example item was '*There is a pleasant atmosphere at my workplace*'. It is worth mentioning that only four of the five items were used in the current study since the first item '*I have a good relationship with my supervisor*' was measured by the EWW scale (i.e., social dimension – relationships with supervisor). This 4-item version of the scale has been previously used and it was found to have good reliability (Cronbach's alpha = .78; Michailidis & Cropley, 2017).

#### **6.4.6. Control variables**

As it has been discussed by previous research, demographic information can have a contributing role to individuals' well-being (Charalampous et al., 2018). In order to control for the potential impact that demographic data could have on the relationship between remote e-working and well-being at work, control variables were included in the analysis. Thus, when testing the hypotheses (performing correlations and regressions), the following variables were controlled: *gender, working extra hours, dependent children,*

*hours of remote e-working per week, main work locations, remote e-working tenure, hours spent driving, and hours spent commuting.*

It was also observed that 22% of the sample were in teaching/education; something reasonable considering the network of the PhD research team coming from academia. Individuals in teaching/education are still classified as knowledge workers (see Chapter 2 for a definition), similarly to the majority of the sample. In addition, academics were suggested to deal with pressures similar to other professional occupations (such as working long hours, blurring of boundaries between personal and working spheres, Currie, & Eveline, 2011). Thus, occupation was not expected to influence the results and was not further assessed.

#### **6.4.7. Plan of analyses**

Data analysis performed is presented in the following five sections

- Section 6.5.1.: Descriptive statistics and a preliminary screening for normality of the data using IBM SPSS Statistics 25. When examining normality the scree plot, skewness and kurtosis of each item are considered. The Kaiser-Mayer-Olkin and the Barlett's test is conducted to examine the suitability of conducting factor analysis (see Chapter 3).
- Section 6.5.2.: Exploratory Factor Analysis (EFA) is performed separately for each well-being construct (i.e., dimensions and sub-dimensions) in Mplus 8.0 (Muthén & Muthén, 2016).
- Section 6.5.3.: Exploratory Structural Equation Modelling analysis (ESEM; Asparouhov, Muthen, & Morin, 2015) is performed on all items using Mplus to explore different factor solutions and examine the total structure of the proposed work-related well-being model. ESEM expands EFA analyses, by including a priori theoretical model into the measurement of EWW scale (Myers, Chase,

Pierce, & Martin, 2011). In particular, ESEM acknowledges the existence of 13 distinct theoretical well-being constructs, and their five overarching well-being dimensions (see Chapter 3 for an in-depth discussion on these types of analytical processes).

The results from EFA and ESEM will be compared, and items will be deleted based on their loadings to the proposed well-being sub-dimensions. The set of goodness-of-fit indices presented in Chapter 3 is assessed to evaluate the factorial solutions. Given the sample size of the present study (i.e.,  $N = 202$ ) only one of the Comparative Fit Index (CFI) or Tucker Lewis Index (TLI) needed to be reported (Yu, 2002). The Root Mean Square Error of Approximation (RMSEA) value was also omitted as it can falsely indicate a poor fitting model due to the small sample size (Kenny, Kaniskan, & McCoach, 2015). Therefore, TLIs and RMSEAs are not considered when suggesting a good or a poor fit of the models.

- Section 6.5.4.: Partial correlations and hierarchical multiple regression analyses are performed using IBM SPSS Statistics 25 between the already existing measures and the EWW scale to investigate scale's construct validity and criterion-related validity respectively.

## **6.5. Results**

### **6.5.1. Preliminary statistics**

To begin with, the presence of outliers and normality of the data were examined (Field, 2013). Participants who had missing data were deleted, leading to a final number of 202 completed responses. Normal distribution was tested by reviewing the values of skewness and kurtosis. Values between -2 and +2 considered as acceptable and proving data's normal univariate distribution (George & Mallery, 2010; Gravetter & Wallnau, 2014). As indicated in Appendix M, although the most of items were between -2 and +2, the

constructs of *cognitive weariness*, *competence*, *relationship with supervisor*, and *autonomy* had items with high skewness and kurtosis. Consequently, EFA was run in Mplus, making use of maximum likelihood estimation with robust standard errors (MLR) estimator, which is used with non-normal data (Asparouhov & Muthén, 2005). The items were treated as continuous normal variables (see Chapter 3 for a justification of why 5-point Likert scales can be treated as continuous variables).

Before performing EFA in Mplus, initial checks were performed in SPSS to ensure that the dataset was suitable for factor analysis. It was, in particular, assessed whether the Kaiser-Mayer-Olkin (KMO) criterion was met. As discussed in Chapter 3, KMO indicates the suitability of conducting factor analysis by examining sampling adequacy. Additionally, Barlett test also assessed data sphericity. For each sub-dimension of the EWW scale the KMO was above the acceptable limit of .50, and the Barlett test for sphericity was significant ( $p < .001$ ), which allowed for further factor analysis (Field, 2013). Appendix M provides the skewness and kurtosis scores for all 74 items of the E-Work Well-being scale, as well as, their Means, and SDs.

Stevens' (2002) proposition for a sample size of 202, factor loadings above .36 was considered to be significant (see Chapter 3). Therefore, researchers set a loading of .36 as a cut-off criterion point for each item to be included. It is worth mentioning though, that in their majority items were above .6. For the sub-dimensions where all the items had good loadings (i.e., above .36) the PhD researcher has in cases dropped the items with the lowest loadings, to meet one of the aims of this pilot study, which was to reduce the length of the scale developed. In summary, the decision in regards to either keeping or deleting an item was based on (a) communality; (b) primary factor loading; (c) item cross-loadings; (d) item's face validity, or in other words, how meaningful item's contribution was to the overall factor; and (e) reliability/internal consistency (Cronbach's alpha).

Table 6.2. presents the means, standard deviations, the Cronbach's alpha coefficients, and the inter-correlations for all validated study variables (i.e., social support, general well-being, psychological distress, sleep problems, detachment from work, self-efficacy). Skewness and kurtosis suggested that all validated study variables were normally distributed. It is worth mentioning that Health and Safety/Ergonomics was a newly devised measure by the PhD researcher, as Appendix N shows, items satisfactorily loaded on one factor. Also, all validated study variables used in the present study showed sufficient internal consistency (Cronbach's alpha > .70 for existing measures; Field, 2013). Following this, targeted correlation analyses between the E-Work Well-being scale and validated measures (i.e., detachment from work, sleep problems, psychological distress, general well-being, self-efficacy and social support) were performed.

Table 6.2.

*Descriptive statistics for the validated scales used in the pilot study*

Validated scales	Mean (SD)	1	2	3	4	5	6	7
1. Social Support	3.91 (.82)	(.80)						
2. General Well-being	3.60 (.66)	.29**	(.88)					
3. Psychological Distress	2.16 (.87)	-.20**	-.51**	(.90)				
4. Sleeping Problems	2.03 (.78)	-.29**	-.30**	.50**	(.87)			
5. Detachment from work	3.05 (.92)	.15*	.34**	-.40**	-.41**	(.84)		
6. Self-efficacy	3.98 (.56)	.29**	.36**	-.30**	-.24**	.15*	(.90)	
7. Ergonomics	2.94 (1.07)	-.21**	-.20**	.25**	.18**	-.29**	-.13*	(.85)

\* $p < .05$ . \*\* $p < .001$

### 6.5.2. EFA results for the E-Work Well-being Scale

The section below elaborates on the EFA that was implemented in Mplus, in order to verify the adequacy of each one of the 13 distinct constructs of the E-Work Well-being scale. It is worth noting, that for each construct, 1- to 3-factor solutions were explored to compare which factor models provided the best fit. For most of the constructs, the 1-factor solution best fitted the data, whereas for a couple of them the 2-factor solution was better. However, the 3-factor solution did not fit well the data for none of sub-dimensions, or when it did (e.g., emotions) the proposed factors were not interpretable. The section below presents precise information regarding sub-dimensions' factor loadings. Appendix O presents the factor loadings for each sub-dimension.

#### 6.5.2.1. *Affective dimension.*

In regards to the *emotions* sub-dimension, although the 3-factor solution ( $\chi^2 = 65.15$ ,  $df = 25$ ,  $p < .001$ ; CFI = .95, SRMR = .03) had a better fit than the two-factor solution ( $\chi^2 = 169.947$ ,  $df = 34$ ,  $p < .001$ ; CFI = .83, SRMR = .06), the 2-factor solution made more conceptual sense. Particularly, whilst the 2-factor solution clearly demonstrates the negative and the positive emotions, the 3-factor solution had cross-loadings between the items. The items loadings for positive emotions, ranged from .42 (*'feeling proud'*) to .86 (*'feeling at ease'*), and for negative emotions ranged from .44 (*'feeling guilty'*) to .88 (*'feeling sad'*). It is worth noting that the proposed solution is still not adequate, something that needs to be explored in a bigger sample.

Examining the *emotional exhaustion* sub-dimension, the one-factor solution ( $\chi^2 = 7.62$ ,  $df = 9$ ,  $p = .57$ ; CFI = 1, SRMR = .02) had an excellent fit. The items loadings ranged from .65 (*'I struggle to get my energy back after a long day of remote e-working'*) to .87 (*'I feel burned out when people expect me to be constantly available using technology'*).



In regards to the *organisational commitment* sub-dimension, the 2-factor solution ( $\chi^2 = 42.89$ ,  $df = 5$ ,  $p < 0.01$ ; CFI = .92, SRMR = .05) was slightly better from the 1-factor solution ( $\chi^2 = 42.89$ ,  $df = 5$ ,  $p < .001$ ; CFI = .92, SRMR = .05). However, the 1-factor solution made more conceptual sense, and still provided a good fit. The items loadings ranged from .67 (*'I feel as if I am part of the organisation'*) to 0.94 (*'I want to put significant effort on behalf of my organisation'*).

When it comes to the *job satisfaction* sub-dimension, the 1-factor solution ( $\chi^2 = 17.23$ ,  $df = 2$ ,  $p < .001$ ; CFI = .90, SRMR = .05) provided a good fit. The items loadings ranged from .63 (*'Not being confined into an office or a single place/ location'*) to 0.79 (*'Balancing your personal and working life'*).

#### **6.5.2.2. Cognitive dimension.**

In regards to the *cognitive weariness* dimension, the 1-factor solution ( $\chi^2 = 37.988$ ,  $df = 5$ ,  $p < .001$ ; CFI = .68, SRMR = .074) had a poor fit. Additionally, the exploration of the 2-factor, or 3-factor solution was not applicable. Investigating the items' loading in the 1-factor solution, it was noticed that the two negatively worded items had the lowest loadings (see Appendix P). As it has been suggested in Chapter 3, using mixed items stems may lead to different factor structure (Pilotte & Gable, 1990), which can be problematic. When removed the two negatively worded items to re-assess the factor's structure, the chi square could not be used for chi-square difference testing in the regular way ( $\chi^2 = 0.00$ ,  $df = 0$ ,  $p < .001$ ; CFI = 1, SRMR = .00) but items had acceptable factor loadings, ranging from .42 to .81. These results indicate a problematic factor structure, suggesting the importance of revisiting the construct.

#### **6.5.2.3. Social well-being dimension.**

When examining the *relationships with colleagues* sub-dimension, the 1-factor solution ( $\chi^2 = 38.13$ ,  $df = 9$ ,  $p < .001$ ; CFI = .93, SRMR = .04) had a good fit. The items loadings

ranged from .69 (*'I find it easy to exchange ideas and connect with my colleagues'*) to .84 (*'I am happy with the quality of my social interactions with colleagues'*).

Regarding the *relationship with supervisor* sub-dimension, the 1-factor solution ( $\chi^2 = 18.212$ ,  $df = 5$ ,  $p < .05$ ; CFI = .97, SRMR = .03) had a good fit. The item loadings ranged from .77 (*'My supervisor trusts me to undertake my job tasks in any location'*) to .88 (*'My supervisor understands my problems and needs regardless of whether I am physically present or not'*).

When investigating the *social isolation* sub-dimension, the 1-factor solution ( $\chi^2 = 5.009$ ,  $df = 5$ ,  $p < .05$ ; CFI = 1, SRMR = .02) had a good fit. The items loadings ranged from .49 (*'I feel I am not always counted as a valuable team member'*) to .78 (*'I have fewer opportunities to interact with colleagues than I would like'*).

#### **6.5.2.4. Professional well-being dimension.**

In regards to the *autonomy* sub-dimension, the 1-factor solution ( $\chi^2 = 4.101$ ,  $df = 5$ ,  $p = .54$ ; CFI = 1, SRMR = .02) had an excellent fit. The item loadings ranged from .51 (*'I have the ability to negotiate with my supervisor what I am expected to accomplish'*) to .87 (*'I have the autonomy to complete my job tasks at any time'*).

When investigating the sub-dimension of *competence*, it seemed that the 1-factor solution ( $\chi^2 = 11.402$ ,  $df = 5$ ,  $p < .001$ ; CFI = .98, SRMR = .03) had an excellent fit. Item loadings ranged from .60 (*'I have the essential IT knowledge, skills and abilities to solve any issues while I am not working in an office environment'*) to .82 (*'I resolve work-related issues that may arise by using information and communication technologies (such as emails, calls and instant messages)'*).

Whilst the 1-factor solution for the *career development* sub-dimension ( $\chi^2 = 50.12$ ,  $df = 5$ ,  $p < 0.01$ ; CFI = .698, SRMR = .084) had a poor fit, the 2-factor solution ( $\chi^2 = 0.095$ ,  $df = 1$ ,  $p = .76$ ; CFI = 1, SRMR = .00) had an excellent fit. Trying to make a

conceptual sense of the two factors, similarly to the cognitive dimension, it was noticed that the two reverse worded items were loading to a second factor, suggesting that this may have well been a reason of having two, instead of one factor (see Appendix P; Pilotte & Gable, 1990). Deleting these items resulted to test a saturated model, meaning that most fit indices cannot be computed (Kenny, 2015). Item loading though was acceptable, ranging between .42 (i.e., *'I make myself visible to the right people in the organisation in order to be promoted'*) to .72 (i.e., *'My organisation understands that people working remotely need adequate career opportunities'*). Similarly to the cognitive dimension, it is proposed that the items of this factor need to be revised.

#### **6.5.2.5. Psychosomatic well-being dimension.**

When examining the *psychosomatic dimension*, it was suggested that although the 1-factor solution ( $\chi^2 = 188.087$ ,  $df = 54$ ,  $p < .001$ ; CFI = .87, SRMR = .06) did not have an adequate fit, the two-factor solution ( $\chi^2 = 110.634$ ,  $df = 43$ ,  $p < .001$ ; CFI = .93, SRMR = .04) had an excellent fit. Delving deeper to the interpretation of the proposed item-factor loadings, it was noticed that the seven items that captured musculoskeletal symptoms were loaded to one factor, whereas the four items that captured more general fatigue symptoms loaded to a second factor. The items *'I experienced tendon pain in the wrists and fingers'* and *'I suffered from pain in my lower limbs such as feet, thighs and hips'* were particularly problematic as they loaded to both factors. Except from these two items, the item loadings ranged from .45 (*'I suffered from pain in my lower limbs such as feet, thighs and hips'*) to .89 (*'I had problems with my sleep'*).

#### **6.5.2.6. Conclusions of the EFA results**

The majority of EFA findings support **Hypothesis 1** which proposes that the developed items will be good indicators of the yielded latent dimensions, revealing 13 distinct well-being constructs. There are some inconsistencies though that need to be acknowledged.

- Regarding the sub-dimension of emotions, a 3-factor solution was supported over the predicted 2-factor solution, which did not conceptually make sense. The 2-factor solution clearly differentiated the positive from the negative emotions, but it did not adequately fit the data.
- Cognitive weariness and career development sub-dimensions were proposed to be problematic.
- Regarding the psychosomatic dimension, a 2-factor solution was supported over the 1-factor solution. This made semantic sense though, as musculoskeletal symptoms seem to load to one factor, whereas the items describing more general fatigue symptoms loaded to a separate factor.

As Table 6.3. displays, EFA confirmed good Factor Determinacy scores for each theoretical dimension (except from *cognitive weariness* and *career development*).

Table 6.3.

*Factor determinacies for the EWW (sub)dimensions as provided by EFA*

Dimension	Factor Determinacy score
Positive emotions	.93
Negative emotions	.93
Job satisfaction	.90
Emotional exhaustion	.96
Organisational commitment	.97
Relationships with colleagues	.95
Relationships with supervisor	.96
Autonomy	.94
Competence	.94
Psychosomatic conditions	.96
Fatigue	.92
Musculoskeletal	.95

### 6.5.3. ESEM analysis of the five-dimension E-Work Well-being model

The 8-, 9-, 10-, 11-, 12-, and 13-factor solutions were explored, including all items and sub-dimensions/dimensions. Table 6.4. provides the goodness of fit statistics for all ESEM factor solutions. As it is illustrated in the table, all of the factor solutions had poor fit to the data as evidenced by fit indices being above threshold. Item-factor loadings for the entire factor solutions were, thus, examined to gain a greater insight into the findings and their meaning.

Table 6.4.

*Goodness of fit statistics for ESEM factor solutions - 74-item version of the EWW scale*

<b>Factor solution</b>	<b><math>\chi^2</math></b>	<b>df</b>	<b>CFI</b>	<b>SRMR</b>
8-Factor solution	4083.424	2137, $p < .001$	.78	.04
9-Factor solution	3888.230	2071, $p < .001$	.80	.04
10-Factor solution	3813.270	2006, $p < .001$	.80	.03
11-Factor solution	3736.752	1942, $p < .001$	.80	.03
12-Factor solution	3603.487	1879, $p < .001$	.81	.03
13-Factor solution	3407.768	1817, $p < .001$	.82	.03

The 9-factor solution seemed to provide the best theoretical interpretability of the results, when compared to the other factor-solutions. In particular, the 8-factor solution was not theoretically clear, with some inconsequential overlapping of the factors. For example, items included in the autonomy sub-dimension (e.g., *'I resolve work-related issues that may arise by using information and communication technologies (such as emails, calls and instant messages)'*) were also loaded to relationships with colleagues sub-dimension. Moreover, the 10-, 11-, 12-, and 13-factor solution had factors with a very low number of

indicators (i.e., 2 items), where the factor loadings were weak ( $<.36$ ) and were double loaded thus limiting their interpretation.

Next, item-factor loadings for the 9-factor solution were examined more in-depth. This exploration guided the removal of two sub-dimensions and six items, to improve the model fit. To start with, the *career development* sub-dimension was deleted, due to low loadings and/or loading in multiple factors. For instance, items shared cross-loadings with relationship with colleagues (*'I make myself visible to the right people in the organisation in order to be promoted'*, factor loading  $=.35$ ); relationship with supervisor (*My organisation understands that people working remotely need adequate career opportunities'* factor loading  $=.37$ ); and social isolation (*'I feel that I am missing relevant information that may enhance my work-related skills'*, factor loading  $=.39$ ). These results were aligned with EFA results presented above, according to which the career development sub-dimension had a problematic factor structure. Taking out this sub-dimension from the analysis was then justified. Subsequently, the construct of *cognitive weariness* was deleted for the same reasons. For example, items shared cross-loadings with *autonomy and competence* (*'I find it easy to take in new information when I am working on a job task'*, factor loading  $=.32$ ); *emotional exhaustion* (*'I do not let emails and instant messages reduce my concentration'* factor loading  $=.33$ ). The ESEM findings were in line with EFA, confirming the problematic nature of this dimension. Eliminating this construct from the analysis is thus justified.

Following the elimination of these two constructs, four items were deleted as they were performing poorly, and two items were deleted to shorten some measures. Particularly, the autonomy item *'I have the ability to negotiate with my supervisor what I am expected to accomplish'* was deleted due to cross loadings (*relationship with supervisor*  $.56$ , *autonomy and competence*  $.31$ ). This item also had the lowest loading in

the EFA results (.51). Next, three items belonging to the psychosomatic dimension were deleted (i.e., *'I felt my body becoming very stiff'*, *'I had pain in the upper body such as forearms and elbows'*, and *'I experienced tendon pain in the wrists and fingers'*). These items were found to cross-load in EFA results. To shorten the scale, one of the emotional exhaustion items (*'I struggle to get my energy back after a long day of remote e-working'*) was deleted as it had the lowest factor loading (.54). This was aligned with the EFA results, with a factor loading equal to .65. Similarly, one item included in the *relationships with colleagues* (*'My colleagues pay attention to my job problems and needs regardless of our location'*) was deleted to shorten the scale, with a factor loading equal to .57.

Hence, the 9-factor solution was re-tested on the 58-item version of the scale after excluding the *career development* and the *cognitive weariness* items, along with poor performing, and redundant items. As thoroughly discussed and justified in Chapter 3 (3.2.3.3.) the 6 highest correlated residuals, as indicated by the modification indices, were included in the model. All the correlated residuals included were within the same theoretical dimension, something that made sense, and were above .10 (Kline, 2015). As Table 6.5. presents, the 9-factor solution including 58-items still had poor fit to the data

Table 6.5.

*Goodness of fit statistics for the 9-factor ESEM solution.*

<b>Factor solution</b>	<b><math>\chi^2</math></b>	<b>Df</b>	<b>CFI</b>	<b>SRMR</b>
9 - Factor solution 74-items version of the EWW scale	3888.230	2071, $p < .001$	.80	.04
9 - Factor solution 58-items version of the EWW scale	2082.169	1161, $p < .001$	.87	.03

*Notes.* Six significant correlations were included: Autonomy Item 5 with Autonomy Item 3; Physical Symptom Item 5 with Physical Symptom 3; Rel. with colleagues Item 3 with Rel. with colleagues Item 2; Physical Symptom 10 with Physical Symptom 9; Physical Symptom 10 with Physical Symptom 11; Organisational Commitment Item 5 with Organisational Commitment Item 4.

( $\chi^2 = 2082.169$ ,  $0df = 2071$ ,  $p < .001$ ; CFI = .87, SRMR = .03), but it was improved from the initial 9-factor solution including 74 items ( $\chi^2 = 3888.230$ ,  $df = 2071$ ,  $p < .001$ ; CFI = .80, SRMR = .04; Appendix P). It could be claimed that the improved fit of the data potentially resulted from excluding problematic constructs and items from the analysis. Therefore, a revisited version of the scale is needed, which can then be assessed in a new population, something that will be achieved in Chapter 7.

Notwithstanding the factor solution not fitting the data adequately, there was a good overlapping between the theoretical dimensions initially proposed by the PhD researcher and the 9-factor solution indicated by ESEM. As initially proposed, Factor 1 contained five items and was labelled *Positive emotions*. Factor 2 contained 11 items and was labelled *Negative emotions*. It is worth mentioning that Factor 2 comprised five items belonging to *social isolation* and the six items belonging to *negative emotions*. Factor 3 contained 5 items and was labelled *Emotional exhaustion*, which was in accordance with the initial conceptualisation of the dimension. Factor 4 contained 7 items and was labelled *Organisational commitment*. Five of these items were initially developed to capture organisational commitment and two of them were developed to capture job satisfaction (i.e., ‘*Not being confined into an office or a single place/ location*’ and ‘*Having the peace to reflect on your work*’). Hence the final solution, includes the cross loadings of these two job satisfaction items, loading on both Factor 4 and Factor 5. Factor 5 contained 4 items and was labelled *Job satisfaction*, which was in line with the initial conceptualisation of the factor. In accordance again of the initial conceptualisation of the dimensions: Factor 6 contained 5 items and was labelled *Relationship with supervisor* and Factor 7 contained 5 items and was labelled *Relationships with colleagues*. Factor 8 contained 9 items and was labelled *Professional aspects of well-being (autonomy and competence)*. Factor 9 contained 9 items and was labelled *Psychosomatic conditions*,



which was adhering to the initial conceptualisation of the dimension proposed by the PhD researcher. All factors showed good Factor Determinacies (see Table 6.6.)

Table 6.6.

*Factor determinacies for the EWW (sub)dimensions as provided by ESEM solution*

Dimension	Factor Determinacy score
Positive emotions	.93
Negative emotions	.95
Job satisfaction	.90
Emotional exhaustion	.96
Organisational commitment	.97
Relationships with colleagues	.93
Relationships with supervisor	.97
Professional aspects of well-being (autonomy and competence)	.94
Psychosomatic conditions	.96

#### 6.5.3.1. Conclusions of the ESEM findings

To conclude, the ESEM findings failed to confirm **Hypothesis 2**, which proposed the existence of a 13-factor model where the proposed constructs of well-being at work freely correlate. Nevertheless, considering that this was an exploratory study, the PhD researcher used the present findings to revise the existing version of the EWW scale and re-assess it within a larger sample of participants, and performing CFA (see Chapter 7).

#### 6.5.4. Initial validation of the E-Work Well-being (EWW) scale using existing validated measures

In order to conduct validity checks of the EWW scale, the PhD researcher had to decide which items to include for each (sub)dimension. EFA findings showed that *cognitive weariness* and *career development* constructs were problematic. The emotions dimension

had good loadings but not an adequate fit and the rest of the sub-dimensions and dimensions examined using EFA were found to fit the data well. Taking into consideration that this is an exploratory analysis of the data, along with the fact that constructs have strong theoretical groundings, it was decided to test correlations and regressions between the EWW scale and already existing measures, using the initial sub-dimensions, as examined by EFA (instead of using the 9-factors proposed by ESEM).

Regardless of the good overlap between the theoretical dimensions and the 9-factor solution proposed by ESEM, suggesting a promising first exploration of the EWW scale, the solution did not adequately fit that data. To recap, the ESEM solution was differentiated to the initially theorised solution in four main points:

1. Cognitive weariness and career development constructs performed poorly.
2. Negative emotions and social isolation items unified under one factor.
3. Autonomy and competence items unified under one factor.
4. Job satisfaction items loaded not only to their individual construct, but cross loaded to the organisational commitment dimension.

Hence, to perform initial validation checks of the EWW scale, the initially theorised constructs were used (as examined by EFA). Both EFA and ESEM results were taken into account, with the following alterations being made to the initial conceptualisation of dimensions and sub-dimensions:

1. When performing the correlation and regression analyses, the dimensions of *cognitive weariness*, and the sub-dimension of *career development* were eliminated from the analyses as they were found to be particularly problematic (by both EFA and ESEM findings).
2. The six items that were deleted during the ESEM analysis, were again kept out of the correlation and regression analyses. This decision was due to either items'

problematic loadings, or to fulfil one of the principal aims of this study, which was to reduce the length of the EWW scale (Appendix Q provides the final items used for the correlation analyses). It is worth noting, that these items were taken out from the final version of the EWW scale examined in Chapter 7.

3. In regards to the psychosomatic dimension, correlations were performed using both an overall score of the items, and by using distinct scores of musculoskeletal items and fatigue items together (as suggested by EFA findings above).

#### **6.5.4.2. Control checks**

The potential role of socio-demographic variables was explored to identify potential confounds. In particular, independent sample t-tests (to test gender differences, and having children or not differences), ANOVAs (to test differences associated to work locations), and correlations (to test differences associated to *working extra hours*, *hours of remote e-working per week*, *remote e-working tenure*, *hours spent driving*, and *hours spent commuting*) were examined. The outcome variables considered for these control checks were the EWW scale and the validated measures used. Considering the length of this analysis, all t-test, correlation and ANOVA results are presented in Appendix R, but a brief discussion is provided below.

The independent sample t-tests identified no significant gender differences, neither differences between those who had children and those had not. Thus, gender and having dependent children was excluded from the following analyses. Correlation analysis indicated some significant relationships between the variables of working extra hours, hours of remote e-working per week, remote e-working tenure, hours spent driving, and hours spent commuting (see Appendix R for more details). Thus, these were included in the correlation and regression models when appropriate (i.e., the control variable was

not included if a statistically significant relationship was not supported between it and the outcome variables assessed).

Based on the number of hours individuals spent in each work location, participants were put into three different categories: 1 = Office as the main work location; 2 = Home as the main work location; 3 = Main work location as other (e.g., client site). ANOVAs suggested that individuals working for the majority of their time in an office location had greater levels of social support, better ergonomics, less negative emotions, less job satisfaction, less social isolation, less autonomy, better psychosomatic health, and less musculoskeletal symptoms compared to individuals working from their home. Also, individuals whose main location was other than the office and home stated greater levels of psychological distress compared to individuals working from home. However, it is worth noting that only 16 individuals (7.9% of the total sample) worked mainly from other locations, compared to 111 (55%) working mainly in the office and 75 (37.1%) working mainly from home; something that may restrict our ability to reach to certain conclusions about this sample of individuals. Thus, the main work location was included in the correlation and regression models when appropriate.

#### **6.5.4.3. Examining construct validity**

The present study provided initial evidence of construct validity for the E-Work Well-being (EWW) scale. The scores for the dimensions/sub-dimensions of the EWW scale were correlated with scores of existing validated tools assessing similar constructs. Correlation analyses were performed by using Partial correlations, which allow controlling of other variables. Since the constructs of *relationship with supervisors*, *autonomy*, *competence* where correlations were not normally distributed bootstrap confidence intervals were checked for all correlations reported. Table 6.7. indicates all the correlations between the EWW sub-dimensions/dimensions with the validated

Table 6.7.

Correlations showing the relationship between the EWW scale and existing validated measures

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1. GEN. SAT.	1																						
2. GEN. COMM.	.58**	1																					
3. WD	-.17*	-0.08	1																				
4. SOC. SUP	.51**	.46**	-.14*	1																			
5. ERG.	-.21**	.63**	0.11	-.21**	1																		
6. POS. MH	.44**	.37**	-0.08	.29**	-.20**	1																	
7. PD	-.40**	-.34**	.23**	-.20**	.25**	-.51**	1																
8. SLEEP	-.35**	-.33**	.17**	-.29**	.18**	-.30**	.50**	1															
9. DFW	.31**	.18*	-.38**	.15*	-.29**	.34**	-.40**	-.41**	1														
10. SE	.23**	.20**	-0.02	.29**	-.13*	.36**	-.30**	-.24**	.15*	1													
11. JOB SAT.	.48**	.53**	-.18**	.21**	-.15*	.30**	-.36**	-.23**	.17**	.22**	1												
12. ORG.	.60**	.73**	-0.02	.43**	-.25**	.43**	-.39**	-.27**	.18**	.31**	.48**	1											
13. EM. EXH.	-.21**	-0.07	.50**	-.13*	.26**	-.30**	.40**	.32**	-.50**	-.16*	-.13*	-0.1	1										
14. PE	.58**	.44**	-.12*	.27**	-0.1	.47**	-.24**	-.25**	.27**	0.09	.46**	.45**	-.14*	1									
15. NE	-.37**	-.27**	0.1	-.29**	.30**	-.27**	.47**	.33**	-.29**	-0.09	-.28**	-.30**	.39**	-.25**	1								
16. COMP.	.29**	.26**	0.42	.17*	0.03	.29**	-.20**	-.17**	-0.03	.44**	.38**	.38**	-0.13	.35**	-0.19	1							
17. AUT.	.46**	.42**	-0.1	.24**	-0.12*	.36**	-.29**	-.17**	.18**	.36**	.52**	.40**	-0.13	.47**	-.19**	.49**	1						
18. SOC. ISO.	-.37**	-.28**	-0.05	-.30**	.33**	-.27**	.36**	.25**	-.19**	-.16*	-.19**	-.41**	.24**	-.19**	.63**	-0.23**	-.24*	1					
19. REL. SUP.	.39**	.43**	-0.05	.40**	-.17**	.29**	-.18**	-.23**	.22**	.22**	.33**	.38**	-0.11	.30**	-0.16	.19**	.37**	-0.21	1				
20. REL. COLL.	.49**	.43**	-0.01	.44**	-.29**	.37**	-.24**	-.24**	.16*	.23**	.28**	.53**	-.18**	.45**	-.35**	.35**	.31**	-.45**	.33**	1			
21. PSYC.	-.34**	-.26**	.20**	-.27**	.27**	-.34**	.54**	.51**	-.34**	-0.1	-.22**	-.25**	.43**	-.22**	.51**	-0.01	-0.04	.46**	-0.07	-.16*	1		
22. MUSC.	-.27**	-.17*	.14*	-.23**	.33**	-.31**	.48**	.39**	-.27**	-0.07	-.16*	-.20**	.35**	-.13*	.41**	0.04	0.03	.40**	-0.03	-0.1	.93**	1	
23. FAT.	-.35**	-.32**	.25**	-.28**	.15*	-.31**	.50**	.55**	-.36**	-0.11	-.25**	-.27**	.43**	-.29**	.53**	-0.06	-.13*	.44**	-0.1	-.20**	.88**	.65**	1

Notes. N = 202. \*\* $p < .001$ , \* $p < .05$ . Pearson correlations were run except between dimensions, except for the *autonomy*, *relationships with supervisor*, and *competence* dimensions where Spearman correlations were performed instead. GEN. SAT. = General Satisfaction, GEN. COMM. = General Commitment, WD = Work Demands, SOC. SUP = Social Support, ERG = Ergonomics, POS. MH = Positive Mental Health, SLEEP = Sleep problems, DFW = Detachment from Work, SE = Self efficacy, JOB SAT = Job Satisfaction, ORG. COMM. = Organisational Commitment, EM. EXH. = Emotional Exhaustion, PE = Positive Emotions, NE = Negative Emotions, COMP. = Competence, AUT. = Autonomy, SOC. = Social Isolation, REL. SUP. = Relationship with supervisor, REL. COLL. = Relationships with colleagues, PSYC. = Psychosomatic, MUSC. = Musculoskeletal, FAT. = Fatigue.

measures used in this study. Nevertheless, the sections below expand solely on the hypothesised relationships, to investigate scale's construct and predictive validity. The findings proposed that relationships between the EWW dimensions and existing measures were in their majority significant and in the direction hypothesised.

#### *6.5.4.3.1. Affective dimension*

As can be viewed in Table 6.8. below, both *positive mental health* and detachment from work were positively correlated with *positive emotions*, *organisational commitment*, and *job satisfaction*; and significantly and negatively correlated to *negative emotions*, and *emotional exhaustion*; confirming **Hypothesis 3** and **Hypothesis 5** respectively. In line with **Hypothesis 4**, *psychological distress* was negatively correlated with *positive emotions*, *organisational commitment*, and *job satisfaction*; as well as it was significantly and positively correlated with *negative emotions* and *emotional exhaustion*. Lastly, overall job satisfaction was significantly and positively associated with remote e-working satisfaction as well as overall organisational commitment was significantly and positively linked to organisational commitment perceptions when e-working remotely (**Hypothesis 6 and 7 respectively**). For all correlations extra hours worked, hours of remote e-working per week, hours spent commuting, hours spent driving, and main work location were controlled as they were significantly correlated with the outcome variables.

Table 6.8.

*Partial correlations supporting construct validity for the affective dimension*

	1	2	3	4	5	6	7	8	9	10
1. PE	1									
2. NE	-.30**	1								
3. ORG. COMM.	.44**	-.33**	1							
4. JOB SAT.	.47**	-.27**	.45**	1						
5. EM. EXH.	-.13*	.38**	-.20*	-.16*	1					
6. POS. MH	.47**	-.27**	.41**	.31**	-.30**	1				
7. PSY. DIS.	-.17*	.45**	-.35**	-.32**	.41**	-.50**	1			
8. DFW	.25**	-.25**	.27**	.22**	-.39**	.35**	-.38**	1		
9. GEN. SAT.	.57**	-.39**	.58**	.46**	-.24**	.44**	-.38**	.36**	1	
10. GEN. COMM.	.41**	-.27**	.69**	.48**	-.10	.35**	-.28**	.22**	.61**	1

Notes. Correlations were controlled for remote e-working per week, and main work location;

\* $p < .05$ ; \*\* $p < .01$ . PE = Positive Emotions, NE = Negative Emotions, ORG. COMM. = Organisational Commitment, JOB SAT = Job Satisfaction, EM. EXH. = Emotional Exhaustion, POS. MH = Positive Mental Health, PSYC. DIS. DFW = Detachment from Work, GEN. SAT. = General Satisfaction, GEN. COMM. = General Organisational Commitment.

#### 6.5.4.3.1.2. Cognitive dimension

Taking into consideration that the *cognitive weariness* dimension was taken out from the analyses at this stage, as it needed to be revised, it was not feasible to explore whether greater levels of cognitive weariness (i.e., cognitive well-being) is correlated to lower levels of detachment from work (**Hypothesis 9**).

#### 6.5.4.3.3. Social dimension

As proposed by **Hypothesis 11**, after controlling for hours of remote e-working per week, and the main work location, *social support* was positively associated with *relationships with colleagues*, *relationship with supervisor*, and negatively associated with *social isolation* (see Table 6.9).

Table 6.9.

*Partial correlations supporting construct validity for the social dimension*

	1	2	3	4
1. Relationships with colleagues	1			
2. Relationships with supervisor	.33**	1		
3. Social Isolation	-.44**	-.14*	1	
4. Social support	.42**	.43**	-.27**	1

*Notes.* Correlations were controlled for remote e-working per week, and main work location hours of remote e-working per week and main work location. \* $p < .05$ ; \*\* $p < .01$ .

#### 6.5.4.3.4. Professional dimension

The **Hypothesis 13** was partially supported as the relationship between *career development* and self-efficacy could not be further explored as this dimension was taken out of the analysis. However, even when controlling for remote e-working tenure and main work location, it was found that the *self-efficacy* was associated with *autonomy*, and *competence* they reported (see Table 6.10.).

Table 6.10.

*Partial correlations supporting construct validity for the professional dimension*

	1	2	3
1. Autonomy	1		
2. Competence	.56**	1	
3. Self-efficacy	.34**	.40**	1

*Notes.* Correlations were controlled for overall remote e-working tenure, and main work location. \* $p < .05$ ; \*\* $p < .01$ .

#### 6.5.4.3.5. Psychosomatic dimension

According to **Hypothesis 15**, even after controlling for extra hours worked, hours of remote e-working per week, hours driving, and main work location, the higher *positive*



*mental health* levels individuals stated the less overall *psychosomatic symptoms* were reported. When examining *musculoskeletal symptoms* and *fatigue symptoms* independently, the relationship remained similar (see Table 6.11.).

Table 6.11.

*Partial correlations supporting construct validity for the psychosomatic dimension*

	1	2	3	4
1. Psychosomatic symptoms	1			
2. Musculoskeletal	.93**	1		
3. Fatigue	.86**	.61**	1	
4. Positive mental health	-.34**	-.31**	-.30**	1

*Notes.* Correlations were controlled for extra hours per week, hours e-working per week, driving, main work location. \* $p < .05$ ; \*\* $p < .01$ .

Overall, these results provide initial evidence of the construct validity of the EWW constructs, except from the constructs of *cognitive weariness* and *career development* which were at this stage excluded from the analyses.

#### 6.5.4.4. Examining criterion-related validity

Hierarchical multiple regression analysis was used to investigate the EWW scale's criterion-related (i.e., predictive validity). As mentioned in Chapter 3, when examining criterion-related validity, researchers are not interested about whether the construct under study precedes, coincides, or follows the criterion (e.g., behaviour), but they are interested about how strong the relationship is (DeVellis. 2016).

##### 6.5.8.1. Checking assumptions before conducting regression analysis

As according to Field (2013) it was necessary to check that no assumptions were violated by the data, consisting a hierarchical multiple regression analysis appropriate. These assumptions were met (and it will be stated if otherwise) and are briefly outlined below:

- (1) The predictor variable (i.e. independent) should be quantitative or categorical and the outcome (i.e., dependent) regressed need to be continuous and quantitative.
- (2) Predictors' variance should not have a variance of 0, and they should be uncorrelated with external variables.
- (3) Multicollinearity should not be perfect, or in other words perfect linear relationship. Tolerance statistics and variance inflation factor (VIF) indicate whether the variables are below the cut-off limits (i.e.,  $VIF < 10$ ; tolerance  $> 1$ ).
- (4) Data need to show homoscedasticity. Residuals at each level of the predicting variable(s) should have the same variance.
- (5) Independent errors: The residual terms for any observations should be uncorrelated (i.e., independent). Durbin-Watson test tests for serial correlations between errors. A value of 2 indicates that the residuals are uncorrelated (value  $> 2$  indicating negative correlation; value  $< 2$  indicating a positive correlation). Values greater less than 1 and greater than 3 are problematic.
- (6) A linear relationship between the dependent variables and each of the independent variables is warranted. Scatterplots can be visually inspected.
- (7) Errors need to be normally distributed, with predictors not having to be necessarily normally distributed.

For all regressions run, control variables (if appropriate/significantly related to the outcome variables) were entered in Model 1 and the predictor variables (e.g., affective well-being) were entered in Model 2.

#### *6.5.8.2. Criterion-related validity for affective, social, and professional dimensions*

To test **Hypothesis 8**, **Hypothesis 12**, and **Hypothesis 14** the control variables (working extra hours, hours of e-working per week, main work locations, remote e-working tenure, hours spent driving, hours spent commuting) were entered in Model 1 and the predictor

variables (affective, social, and professional dimensions) were entered in Model 2. As displayed in Table 6.12. the control variables accounted for 5% of the variance in sleep problems. The model as a whole (including both control variables and predictors) explained 17% variability in sleep problems. Thus, the predictor variables explained an additional 12% in the variance of the sleep problems even when the control variable were statistically controlled for. **Hypothesis 8, Hypothesis 12, and Hypothesis 14** were confirmed. From the predictor variables entered in Model 2 only emotional exhaustion contributed significantly to the prediction of sleep problems.

Table 6.12.

*Multiple regression analyses predicting sleep problems*

	Model 1		Model 2	
	$\beta$	$t$	$\beta$	$t$
Working extra hours	.26	<b>3.26**</b>	.12	1.48
Hours of e-working per week	-.11	-1.28	-.11	-1.24
Main work locations	.15	<b>1.93*</b>	.12	1.43
Remote e-working tenure	-.03	-.43	.00	.04
Hours spent driving	.01	.08	-.04	-.51
Hours spent commuting	.05	.69	.06	.77
Negative emotions			.17	1.77
Positive emotions			-.04	-.39
Organisational commitment			-.08	-.88
Job satisfaction			-.02	-.24
Emotional exhaustion			.20	<b>2.53*</b>
Relationship with colleagues			.02	.20
Relationship with supervisors			-.13	-1.73
Social isolation			.03	.31
Autonomy			.05	.51
Competence			-.10	-1.09
<i>Adjusted R<sup>2</sup></i>	.05		.17	
<i>F</i>	<b>2.54*</b>		<b>3.48**</b>	

*Note: \*p < .05. \*\*p < .001*

#### 6.5.8.3. Cognitive dimension

**Hypothesis 10**, which suggested that greater levels of cognitive weariness would predict greater levels of sleeping problems, was not explored further, as cognitive weariness was taken out of the analysis.

#### 6.5.8.4. Psychosomatic dimension

Regressions for **Hypothesis 16** and **Hypothesis 17** were not run as the greater technology use and extensive driving were not statistically significantly correlated with psychosomatic health ( $r = .01$ ;  $r = .05$  respectively). To test **Hypothesis 18** the control variables (working extra hours, hours of e-working per week, and the main work locations) were entered in Model 1 and the predictor variable (ergonomics well-being) was entered in Model 2. As Table 6.13. displays the control variables accounted for 6.70% of the variance in overall psychosomatic health. The model as a whole (including both control variables and predictors) explained 8.34% variability in psychosomatic health. Therefore, **Hypothesis 18** was confirmed.

Table 6.13.

*Multiple regression analyses predicting psychosomatic health*

	Model 1		Model 2	
	$\beta$	$t$	$\beta$	$t$
Working extra hours	.21	<b>2.87*</b>	.18	<b>2.47*</b>
Hours of e-working per week	-.05	-.58	-.04	-.52
Main work locations	.24	<b>3.13**</b>	.19	<b>2.51*</b>
Ergonomics			.24	<b>3.48**</b>
Adjusted $R^2$	.08		.13	
$F$	<b>6.70**</b>		<b>8.34**</b>	

Note. \* $p < .05$ . \*\* $p < .001$

Interestingly, when the analyses were performed separately on musculoskeletal symptoms and fatigue (see Table 6.14. and Table 6.15. respectively), it became apparent that the ergonomics contributed significantly to musculoskeletal symptoms whereas it did not for fatigue.

Table 6.14.

*Multiple regression analyses predicting musculoskeletal health*

	Model 1		Model 2	
	$\beta$	$t$	$\beta$	$t$
Working extra hours	.15	<b>1.94*</b>	.10	1.42
Hours of e-working per week	-.04	-.42	-.03	-.33
Main work locations	.22	<b>2.82*</b>	.15	<b>2.05*</b>
Ergonomics			.31	<b>4.57**</b>
<i>Adjusted R<sup>2</sup></i>	.05		.14	
<i>F</i>	<b>4.43*</b>		<b>8.89**</b>	

*Note.* \* $p < .05$ . \*\* $p < .001$

Table 6.15.

*Multiple regression analyses predicting psychosomatic fatigue*

	Model 1		Model 2	
	$\beta$	$t$	$\beta$	$t$
Working extra hours	.26	<b>3.43**</b>	.24	<b>3.23**</b>
Hours of e-working per week	-.06	-.67	-.05	-.64
Main work locations	.21	<b>2.82**</b>	.20	<b>2.53*</b>
Ergonomics			.09	1.33
<i>Adjusted R<sup>2</sup></i>	.09		.09	
<i>F</i>	<b>7.12**</b>		<b>5.87**</b>	

*Note.* \* $p < .05$ . \*\* $p < .001$

Hence, these results provided initial evidence of criterion-related validity, with respect to three out of the five E-Work Well-being sub-dimensions (as the *cognitive weariness* and *career development* perceptions constructs were kept out of the analysis).

## **6.6. Discussion of the pilot study results**

### **6.6.1. Summary and discussion of E-Work Well-being (EWW) survey results**

This chapter presented an initial validation of the EWW scale, which aimed to assess well-being at work for employees who can work at a variety of locations, making use of ICTs to stay connected to their colleagues and supervisors. The scale has strong theoretical groundings as items were developed based on an extensive review of the literature on the topic (Chapter 2) and interviews conducted within remote e-workers (Chapter 4). The review of existing measures of well-being at work informed, enriched, and confirmed developed items. The current pilot study assesses an initial set of 74 items, which resulted from experts' comments, ratings, and feedback (Chapter 5).

The concept of well-being at work was conceptualised adopting Van Horn et al.'s (2004) five-dimensional model. Five distinct theoretical dimensions and their sub-dimensions (13 constructs in total) of well-being at work have been explored, along with their relationship with existing validated measures. The well-being constructs examined were in particular: *positive emotions*, *negative emotions*, *emotional exhaustion*, *organisational commitment*, *job satisfaction*, *cognitive weariness*, *relationships with colleagues*, *relationship with supervisor*, *social isolation*, *autonomy*, *career development*, *competence*, and *psychosomatic symptoms*. The multi-dimensionality of the EWW scale proposes a complex model. However, considering the fact that this pilot study was exploratory, dimensions and sub-dimensions were examined distinctively. This pilot study included a target population of 202 U.K. remote e-workers, in different job roles and amount of time spent away from an office location.

EFA supported that the items, in their majority, loaded to their theoretically suggested factors, except from the constructs of *cognitive weariness* and *career development* which were particularly problematic. Consequently, these were taken out from the analyses. Moreover, the sub-dimension of emotions did not provide a good fit, when simultaneously the psychosomatic dimension was suggested to have a possible 2-factor structure, distinguishing between musculoskeletal, and fatigue symptoms. ESEM proposed a relatively good overlapping between the initially proposed theoretical dimensions and a 9-factor solution, but this solution was still not adequate. In this 9-factor solution the two constructs mentioned above, and items which were problematic/not performing very well were deleted, resulting in a 58-item version of the scale (see Appendix Q). Since the 9-factor model did not adequately fit the data, all the validity checks were performed using the initially theorised dimensions (as tested by EFA).

After analysing the results of this pilot study, 58 items seemed to be performing well and were kept for subsequent analyses of the scale (see validity checks below). These results also provided enough information which is going to be used in the following chapter (Chapter 7) when revising the EWW scale. Following revisions will aim to enhance current theoretical dimensions and better capture the constructs under study. Furthermore, except from the excluded constructs of *cognitive weariness* and *career advancement*, the EWW scale dimensions/sub-dimensions showed acceptable internal consistency, enhancing scale's reliability.

Drawing upon relationships between the EWW scale and validated scales, this study also provided some initial evidence for scale's construct validity and criterion-related validity. In line with previous research, the more positive affectivity stated by the EWW scale (i.e., more positive emotions, job satisfaction and organisational commitment; and less negative emotions and emotional exhaustion), the greater positive

mental health (e.g., Diehl et al., 2011), less psychological distress (Voydanoff & Donnelly, 1999), greater detachment from work (Cropley et al., 2012; Michailidis & Cropley, 2017). The constructs of job satisfaction and organisational commitment were linked to generic items assessing these constructs. Findings, thus, confirmed affective dimension's construct validity. The affective well-being dimension predicted sleep proving its criterion-related validity (Scott & Judge, 2006; Sonnentag et al., 2008).

Social well-being (i.e., relationships with colleagues and supervisors, and feelings of social isolation) was positively related to individuals' perceptions of social support. The EWW social well-being dimension shares common theoretical grounds with the social support construct, justifying their correlation, which in turn provides support for this dimension's construct validity. Additionally, in line with previous research, supportive work relations predicted individuals' sleep quality (Crain et al., 2014), which confirmed dimension's criterion related validity.

Furthermore, greater levels of professional well-being (i.e., autonomy, and competence), as measured by the EWW scale, were associated with greater self-efficacy levels in remote e-workers, supporting its construct validity. This is similar to researchers' suggestion that the more autonomous individuals claimed they were, the greater levels of self-efficacy they claimed (Van Mierlo et al., 2006). The professional well-being dimension predicted less sleep problems, something which is in line with previous research (Stephoe et al., 2008); confirming its criterion-related validity.

Fewer psychosomatic complaints were associated with positive mental health (Taris et al., 2001), proving this dimension's construct validity. Also, sound remote e-working station ergonomics predicted fewer psychosomatic symptoms (Dennerlein & Johnson, 2006; Ellison, 2012; Garza, Catalano, Katz, Huysmans, & Dennerlein, 2012) which indicated this dimension's criterion-related validity. This finding further



strengthens the claim that research should focus more on remote e-workers' psychosomatic health (Charalampous et al., 2018), as if not enough attention is paid to ergonomics, then individuals are at a high risk to experience psychosomatic issues.

These results met PhD researcher's expectations and provided initial evidence of construct and criterion-related validity, for almost all of EWW (sub) dimensions (except from the cognitive weariness and career development perceptions sub-dimensions).

#### **6.6.2. Limitation of this study**

Notwithstanding the strengths and the contribution that this study had on the EWW scale development, there are a couple of limitations that are worth acknowledging. Although 202 participants could be perceived as an adequate number by a portion of researchers, it has also been suggested that bigger samples may be required when exploring complex models such as the one underlying the EWW scale (see Chapter 3). This limitation will be addressed in the main study presented in the following Chapter 7. As already mentioned, the snowballing method was used which does not allow to scrutinize the qualifications of the recruited sample is limited (Dusek, Yurova, & Ruppel, 2015). However, this is counterbalanced after collecting rich socio-demographic information, which provides a good description of the recruited sample.

#### **6.6.3. Conclusion**

The present study used EFA and ESEM to explore the structure of the 74-item version EWW scale, as well as its construct and criterion-related validity. Except from the constructs of *cognitive weariness* and *career development*, and six items which were supported to be problematic or weak, the rest of the well-being constructs had their theorised items loading on to them. Initial evidence of scale's construct and criterion validity is provided, and internal consistency is demonstrated. These findings enabled for a revision of the scale which is then further explored in the following main study.

## **Chapter 7: Main study to provide additional validation of the E-Work Well-being scale and further validation of the E-Work Life scale.**

### **7.1. Overview**

The pilot study in Chapter 6 enabled the revision of the E-Work Well-being (EWW) scale, suggesting both the deletion and the revision of initially developed items. This led to the 58-item version of the scale, which is revisited in the present chapter. Particularly, an updated 71-item version of the EWW scale is concluded, which is then assessed in an online questionnaire included in the main study, and presented in this chapter. Existing validated measures were also used in order to check for scale's construct and criterion-related validity. This chapter also provides further validation of the E-Work Life (EWL) scale, as developed by Grant et al. (2019), which is a scale that can be used alongside the EWW scale to gain a more holistic understanding of the remote e-working experience.

### **7.2. Revisiting the 58-item version the E-Work Well-being (EWW) scale**

As according to the pilot study presented in Chapter 6, the majority of EWW items loaded as expected, revealing the proposed latent variables (i.e., sub-dimensions). Considering findings provided by both EFA and ESEM items, a 58-item version of the EWW scale was concluded, on which validity checks were performed. Notwithstanding the overlapping between the theoretical dimensions initially proposed by the PhD researcher and the 9-factor solution indicated by ESEM, the sub-dimensions of *cognitive weariness* and *career development* were withdrawn from the pilot study analysis, suggesting the importance of revising the items to more effectively capture the concepts of interest. Thus, the sections below revisited these two sub-dimensions. In addition, as thoroughly discussed in the pilot study, EFA and ESEM analyses guided the deletion of a 6 items,

either because they were problematic, or to make the scale shorter (see Appendix Q). Based on these findings, this chapter suggested rewording of one item belonging to the *autonomy* sub-dimension, as well as adding one item for the *psychosomatic dimension*. These changes were implemented, proposing to better capture the constructs of interest and to improve how the scale performed. It is worth noting that for the sub-dimensions and dimensions that no reference is made, items were kept the same (see 58-item version in Appendix Q). This process led to a revised 71-item version of the EWW scale, which is consequently assessed in the main study presented in this chapter.

#### ***7.2.1. Revisiting the cognitive well-being dimension (i.e., cognitive weariness).***

To start with, the items included in the cognitive well-being dimension were worded in the same direction to avoid any different factor structure, which could potentially happen due to a ‘method factor’ (Woods, 2006). The presence of a method factor is a common phenomenon when having both negative and positive items (e.g., Currey et al., 2002; see Chapter 3 for a more detailed discussion). In addition, one item was re-worded using simpler wording, and two items which performed particularly poorly were deleted. Next, the cognitive exhaustion sub-dimension from the Shirom-Melamed Burnout Measure (SMBM; Shirom, 1989; 2003) was reviewed to guide the development of the additional items for this dimension. According to Shirom (1989; 2003) ‘*thinking clearly*’ is a key aspect of cognitive exhaustion, something that was missing from the current cognitive weariness sub-scale. Therefore, two new items were adapted from the SMBM scale. As it can be observed, all three newly devised items were worded to be suitable for a remote e-working population. The element of interruption caused by receiving too many emails and instant messages, and the weariness linked to working across multiple locations were commonly discussed among interviewees in Chapter 4, and thus considered to be reasonable to include. Table 7.1. illustrates the exact changes made to this dimension.

Table 7.1.

*Cognitive weariness revisited EWW dimension*

No	Item	Old/ New
1	I find it easy to concentrate on my work activities <b>Reworded to:</b> I find it hard to concentrate on my work activities	Reworded
2	I find it easy to take in new information when I am working on a job task <b>Reworded to:</b> I find it difficult to take in new information when I am working on a job task	Reworded
3	I do not let emails and instant messages reduce my concentration <b>Reworded to:</b> Receiving emails and instant messages decreases my concentration	Reworded
4	I find it hard to concentrate when I receive too many emails and instant messages from colleagues	Deleted
5	I struggle to concentrate when I am working in locations other than the office.	Deleted
6	I cannot think clearly about work tasks when I receive too many emails and instant messages from colleagues <b>Adapted from:</b> I think I am not thinking clearly (SMBM scale)	New
7	Working across multiple locations affects my ability to think clearly about work task <b>Adapted from:</b> I think I am not thinking clearly (SMBM scale)	New (adapted)
8	My thinking is interrupted when I receive too many emails and instant messages from colleagues <b>Adapted from:</b> I think I am not focused on my thinking (SMBM scale)	New (adapted)

**7.2.2. Revisiting the career development sub-dimension**

Out of the five items of this dimension only one item remained the same. One item which performed poorly was reworded to improve wording. The aspect of ‘*my supervisor*’ was taken out from one item to better differentiate it from items belonging to the ‘*relationship*’

*with supervisor'* sub-dimension. In addition, similarly to the cognitive dimension, items were kept to one direction, to ensure that different item stems did not allow the reveal of a method factor (Woods, 2006). Table 7.2. illustrates the exact changes made to this dimension.

Table 7.2.

*Career development revisited EWW sub-dimension*

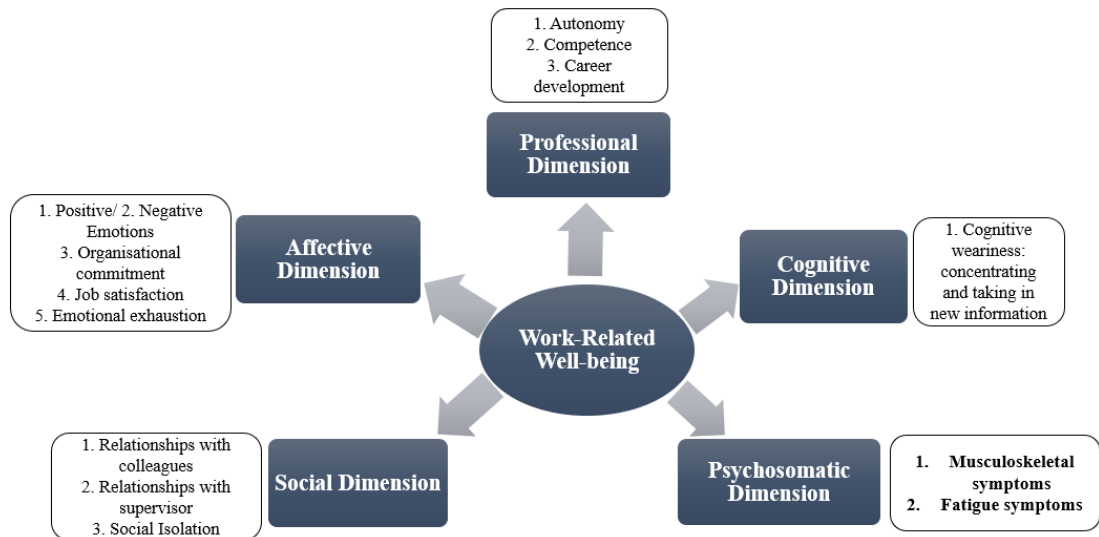
No	Item	Old/Reworded
1	My organisation understands that people working remotely need adequate career opportunities	Old
2	I make myself visible to the right people in the organisation in order to be promoted' <b>Reworded to:</b> I am in contact with the right people in the organisation who could help me in getting promoted.	Reworded
3	My supervisor provides me with constructive feedback that I need to develop professionally' <b>Reworded to:</b> I receive constructive feedback that I need to develop professionally	Reworded
4	I feel that I am missing relevant information that may enhance my work-related skills' <b>Reworded to:</b> I feel that I am receiving all the relevant information that may enhance my work-related skills'	Reworded
5	I feel that I can easily be forgotten regarding career opportunities that come up in my organisation' <b>Reworded to:</b> I feel that I am acknowledged regarding career opportunities that come up in my organisation.	Reworded

### **7.2.3. Further changes to the EWW scale items**

One item regarding the autonomy sub-dimension was amended. Specifically, the item '*I have the ability to negotiate with my supervisory what I am expected to accomplish*' was reworded to '*I have the ability to negotiate what I am expected to accomplish*'. This

amendment aimed to reduce item's overlap with the relationship with supervisor sub-dimension. By taking the phrasing '*with my supervisor*' out, was expected to increase item's adherence to the autonomy sub-dimension and eliminate shared variance with the relationship with the supervisor sub-dimension. Moreover, one item was added to the psychosomatic dimension. The evaluation of the dimension by EFA suggested that items included in the psychosomatic dimension tended to group to two distinct factors, indicating musculoskeletal symptoms and loss of physical energy, or otherwise fatigue. Previous literature has suggested that, this loss of physical energy/fatigue was supported to be an integral aspect of psychological phenomena such as burnout (Shirom, 1989); chronic fatigue syndrome (Leone et al., 2011), and depression (Iacovides, Fountoulakis, Kaprinis, & Kaprinis, 2003). After reviewing the '*physical fatigue*' scale by Shirom-Melamed Burnout Measure (SMBM), it seemed appropriate to add an item about energy depletion, which is not currently captured by the psychosomatic dimension. Hence, the item '*I have no energy for going to work in the morning*' from SMBM was re-worded to '*I lack energy for work*'. The current study will, thus, treat the psychosomatic well-being as a two-dimensional construct which manifests itself in the dimension of musculoskeletal and fatigue-related symptoms.

These revisions led to the 71-item version of the E-Work Well-being scale (see Appendix S), which is going to be used in the main study presented below, for additional validation. In addition, the amendments to the EWW scale brought a slight alteration to the conceptualisation of Van Horn et al.'s (2004) model, moving from a total of 12 distinct constructs of well-being to 13 (Figure 7.1.).



*Figure 7.1.* Revised version of Van Horn et al.'s (2004) model with the psychosomatic dimension consisting of two sub-dimensions.

### 7.3. Revisiting the 17-item version of the E-Work Life (EWL) scale.

This chapter also provides further validation for the generalised E-Work Life (EWL) scale, which can be relevant to use alongside the E-Work Well-being (EWW) scale when gaining a greater understanding of the remote e-working experience. Before conducting further validation checks, the scale was refined considering both its preliminary validation (Grant et al., 2019), and the qualitative study of this thesis (Chapter 4).

Although the interviews conducted with remote e-workers had a focus on well-being to support the new EWW scale, they also explored and revealed the whole remote e-working experience. Therefore, the in-depth and lengthy interviews allowed for sufficient information to be collated about all wider areas of remote e-working, namely, the four dimensions of the EWL scale: Organisational trust, Flexibility, Work-life Interference, and Effectiveness/ Productivity. The section below presents both old and newly added items to the E-Work Life scale, as well as the rewording of some items to better capture the latent constructs. This refinement led to a 22-item version of the scale,

which is consequently validated in this main study. The decision to develop more items was guided by literature suggesting that a retention of four to six items per construct may be ideal (Hinkin, 1998), and that at least four items are needed to comprise a factor when testing for homogeneity of items (for each construct; Harvey et al., 1985). Increasing the items may, thus, be pivotal when fully capturing the constructs under examination.

### **7.3.1. Organisational trust (6 items)**

As according to Grant et al. (2019) trust relates to the way in which the remote e-worker experiences their relationship with their manager. Trust can be a means to urge individuals to be more committed to their organisation, and go the extra mile. Table 7.3. presents the three items included in the 17-item version of the scale. Referring back to the interviews conducted in Chapter 4, three new items were generated, tapping the key elements relating to trust as suggested by the interviewees: micromanaging, professional support, and trust which is independent from being visible.

Table 7.3.

#### *Organisational trust revisited EWL dimension*

No	Item	Old/ New
1	My organisation provides training in e-working skills and behaviours	Old
2	I trust my organisation to provide good e-working facilities to allow me to e-work effectively	Old
3	My organisation trusts me to be effective in my role when I e-work remotely	Old
4	My manager does not micro-manage me when e-working remotely	New
5	I trust my manager to provide me with career professional developmental opportunities when e-working remotely	New
6	When I'm not visible e-working remotely, my manager trusts me to work effectively	New



### 7.3.2. Flexibility (5 items)

When it comes to the flexibility dimension, Grant et al. (2019) included items evolving around the when and how work is completed, flexing hours. As highlighted in the interviews conducted (Chapter 4), two newly developed items considered the aspect of flexibility around the location in which work is completed, and the importance of being able to take longer breaks during their typical working hours, for both personal and family reasons, and complete their work hours later on in the day/evening (see Table 7.4).

Table 7.4.

#### *Flexibility revisited EWL dimension*

No	Item	Old/ New
1	My work is so flexible I could easily take time off e-working remotely, if and when I want to	Old
2	My line manager allows me to flex my hours to meet my needs, providing all the work is completed	Old
3	My supervisor gives me total control over when and how I get my work completed when e-working	Old
4	There are no constraints on the location where I work providing I complete my role effectively	New
5	I work flexible hours across the day breaking down my hours to suit my work and non-work commitments	New

### 7.3.3. Work-life interference (6 items)

Out of the seven items constituting this dimension in Grant et al.'s (2019) paper, four items kept as they were (see Table 7.5.). Referring back to the interviewees in Chapter 4, two of the seven items were slightly reworded, aiming to a more appealing wording. In addition, the item No7 was not semantically aligned with the rest of the items in this dimension. Its reference to *work demands*' suggested some shared grounds with the

Effectiveness/Productivity dimension. To avoid interference within dimensions, this item was, thus, reworded and moved to the Effectiveness/Productivity dimension instead.

Table 7.5.

*Work/Life interference revisited EWL dimension*

No	Item	Old/ Reworded
1.	My e-working does not take up time that I would like to spend with my family/friends or on other non-work activities	Old
2.	When e-working remotely I do not often think about work-related problems outside of my normal working hours	Old
3.	I am happy with my work-life balance when e-working remotely	Old
4.	Constant access to work through e-working is not very tiring	Old
5.	When e-working from home I do know when to switch off/put work down so that I can rest <b>Reworded to:</b> When e-working from home I do know when to switch off so that I can recuperate effectively	Reworded
6.	My social life is poor when e-working remotely <b>Reworded to:</b> My relationships suffer when I am e-working remotely.	Reworded
7.	I feel that work demands are much higher when I'm e-working remotely	Reworded/ Moved to Effectiveness/P roductivity

**7.3.4. Job effectiveness/ Productivity (5 items)**

As can be displayed in the Table 7.6., three out of the five items of this dimension remained the same. Item No 4 was slightly reworded. Particularly, the reference to '*other family responsibilities*' was deleted to eliminate any similarity with the Work-life Interference dimension. Also, as mentioned above, the item "*I feel that work demands are much higher when I am e-working remotely*" was moved from the Work-Life

Interference dimension to this dimension and was reworded to “*I can cope with work demands more effectively when I e-work remotely*”.

Table 7.6.

*Effectiveness/ Productivity (revising the 17-item version of the E-Work Life scale)*

No	Item	Old/ Reworded
1.	When e-working I can concentrate better on my work tasks	Old
2.	E-working makes me more effective to deliver against my key objectives and deliverables	Old
3.	My overall job productivity has increased by my ability to e-work remotely/from home	Old
4.	If I am interrupted <b>by family/other responsibilities</b> whilst e-working from home, I still meet my line manager’s quality expectations <b>Reworded to:</b> If I am interrupted when working from home I still meet my manager’s quality expectations	Reworded
5.	I can cope with work demands more effectively when I e-work remotely	Reworded/ Moved from Work/Life interference

A minor alteration that is worth mentioning regarding the entire scale, is that the term *manager* was used to replace terms such as *line manager* and *supervisor* to maintain consistency in items’ wording. This revision led to an updated 22-item version of E-Work-life scale (Appendix T).

#### **7.4. Research Rationale and Hypotheses**

##### **7.4.1. The relationship between the E-Work Well-being (EWW) scale and validated measures to examine construct and criterion-related validity.**

As discussed in Chapter 3, when developing new measures, it is essential to examine their validity by examining how the developed measure is associated with other relevant

existing measures. The pilot study investigated construct and criterion-related validity of the EWW scale, considering its association with existing validated measures. Some of the relationships assessed were replicated (e.g., associations with positive mental health), whereas some new relationships were introduced (e.g., associations with technostress). Given the amendments made on the EWW, rechecking scale's construct and criterion-related validity is essential.

#### ***7.4.1.1. Establishing construct validity for the affective dimension***

Scholars have treated the concept of positive mental health similarly to the concept of mental well-being, with clinical psychology implementing measures of positive functioning (Joseph & Wood, 2010). Research undertaken by Keyes (2002; 2005) operationalise mental health by including symptoms of positive feelings and positive functioning. Keyes' (2002) analyses revealed that impairment in individuals' emotional health were inextricably linked to depression and struggles individuals went through. Therefore, it is expected that:

*Positive mental health* will be positively correlated with *positive emotions, job satisfaction, organisational commitment*; and negatively correlated with *negative emotions* and *emotional exhaustion* (**Hypothesis 1**).

#### ***7.4.1.2. Establishing criterion-related validity for the affective dimension***

In accordance with the interviews presented in Chapter 4, individuals suggested experiencing positive emotions (and simultaneously less negative emotions), less emotional exhaustion, as well as they felt more committed and satisfied to their organisation. Interviewees proposed that being able to work flexibly, to better manage their working and personal lives, were fundamental reasons contributing to this positive affectivity. This is in line with previous research suggesting that flexibility practices may have a positive impact on both individual outcomes (such as reducing stress linked to

commuting), and organizational outcomes (such as increase in productivity; Mokhtarian, Bagley & Saloman, 1998). Even when the flexibility that individuals had when e-working remotely led to an intensification of work, individuals were still more satisfied with their jobs and committed to their organisation in comparison to their office-based counterparts (Kelliher & Anderson, 2010). As according to Ter Hoeven and Van Zoonen's (2015) study, remote e-workers' well-being may increase as a result of more flexibility individuals gain around where to conduct their work. Therefore, it is expected that:

*Flexibility will predict positive emotions, job satisfaction, and organisational commitment; and lower levels of negative emotions and emotional exhaustion (Hypothesis 2).*

Moreover, remote e-workers suggested being more productive the days they worked outside an office environment, and when completing their jobs. Business outcomes such as productivity were found to be associated with affective employee well-being (Harter, Schmidt, & Keyes, 2003). Furthermore, the positive association between work-life balance and individual well-being has been extensively studied (Gröpel, & Kuhl, 2009). It was, specifically, supported that when remote e-workers could separate the boundaries between work and personal spheres, and had control over the location and time of their work, they had more positive individual well-being (Kossek et al., 2006). In addition, the perception that individuals can balance their working and personal roles was found to be essential to greater quality of their life (Fisher, 2002), whilst failing to balance these roles led to reduced job satisfaction (Allen, Herst, Bruck, & Sutton, 2000). It is, thus, anticipated that:

*Work-life interference will be predicted by lower levels of positive emotions, job satisfaction, and organisational commitment; and greater levels of negative emotions and emotional exhaustion (Hypothesis 3).*

*Job effectiveness* will be predicted by *positive emotions*, *job satisfaction*, and *organisational commitment*; and lower levels of *negative emotions* and *emotional exhaustion* (**Hypothesis 4**).

Based on both the pilot study (Chapter 6) and strong evidence suggesting that the quality of sleep tightly links to affect (Scott & Judge, 2006; Sonnentag, Binnewies, & Mojza 2008) it is expected that:

*Sleep problems* will be predicted by lower levels of *positive emotions*, *job satisfaction*, and *organisational commitment*; and greater levels of *negative emotions* and *emotional exhaustion* (**Hypothesis 5**).

#### ***7.4.1.3. Establishing construct validity for the cognitive dimension (cognitive weariness)***

Individuals may occasionally find themselves being preoccupied with work-related matters, something which makes it difficult to become mentally distant from work and to enjoy fulfilling work-life interference (Carlson & Frone, 2003). The degree to which individuals effectively manage their work and personal life boundaries, has an impact to their ability to achieve psychological detachment from work during leisure time (Sonnentag and Fritz, 2007). Being unable to switch-off and unwind after work, being constantly pre-occupied with work matters is expected reflect on individuals' cognitive weariness levels. It is, thus, predicted that:

*Detachment from work* will be negatively associated with *cognitive weariness* (**Hypothesis 6**).

#### ***7.4.1.4. Establishing criterion-related validity for the cognitive dimension (cognitive weariness)***

According to the interviews conducted in Chapter 4, individuals suggested that receiving an excessive amount of emails and instant messages, and being constantly available

(something that is embedded to remote e-working practices) could reduce concentration levels, making them feel more cognitively weary. Stress induced by ICT use in order to stay connected to the workplace was classified by scholars as technostress (Tarafdar et al., 2007). It is, thus, expected that:

*Technostress will predict cognitive weariness (Hypothesis 7).*

***7.4.1.5. Establishing construct validity for the social dimension (relationship with colleagues, relationship with supervisor and social isolation).***

Organisational trust can contribute to a successful remote e-working workforce (Kowalski & Swanson, 2005). As Sewell and Taskin (2015) proposed organisations are called to move from mutual trust built on physical presence, to “attempts to reinstate a sense of trust by signalling availability and commitment” (p. 1522). Remote e-workers’ attitudes and performance, when working outside a typical office environment, was supported to be linked to the degree to which individuals felt trusted by their manager (Baker et al., 2006). The higher levels of trust linked to more positive cooperation attitudes suggesting the importance of management bringing their teams together, in order to increase cooperation (Lin, Wang, Tsai, Hsu 2010). Also, according to Baker et al. (2006a), the more trusted individuals felt, the more satisfied they were with their job. Moreover, trusting remote e-workers is pivotal as according to research the more support provided by the supervisor, the less stress individuals may experience, as well as more job satisfaction (Babin & Boles, 1996). Hence, it is expected that:

*Organisational trust and manager support for remote e-working will be positively associated with relationship with colleagues, and relationship with supervisor; and negatively associated with social isolation (Hypothesis 8 and Hypothesis 9 respectively).*

**7.4.1.6. Establishing criterion-related validity for the social dimension (relationship with colleagues, relationship with supervisor and social isolation).**

Family-supportive supervisor behaviours were found to be a resource which predicted individuals' (both objective and self-reported) levels of sleep quantity and quality (Crain et al., 2014). It is, thus, expected that:

*Sleep problems will be predicted by relationship with colleagues, and relationship with supervisor; and social isolation (Hypothesis 10).*

**7.4.1.7. Establishing construct validity for professional dimension (autonomy, competence and career development)**

General self-efficacy, as defined by (Judge, Erez, et al., 1998) is "individuals' perception of their ability to perform across a variety of different situations" (p. 170). Hence, it captures how capable individuals perceives themselves when competing task demands in a variety of contexts. Individuals levels of self-efficacy were also found to link to their autonomy levels (van Mierlo et al. 2006). Previous literature has suggested that individuals beliefs of self-efficacy were also inextricably linked to their career decision choices, having a great influence on their interests and goals within their jobs (Hackett & Lent, 1992). It is expected that:

*General self-efficacy will be positively associated with autonomy, competence and perceptions of career advancement (Hypothesis 11).*

**7.4.1.8. Establishing criterion-related validity for professional dimension (autonomy, competence and career development)**

Individuals' perceptions of performance were also found to be linked to their self-efficacy levels (Gist & Mitchell 1992; Stajkovic & Luthans, 1998). In a similar vein, research has shown that the more self-efficacious remote employees were the more effective and productive they perceived themselves to be (Staples, Hulland, & Higgins, 1999); as well



as more satisfied they felt with their jobs (Staples et al., 1999). It can be then assumed that the more self-efficacious individuals feel in general, the more competent they would perceive themselves to be in a remote e-working setting.

*Job effectiveness* will be predicted by *autonomy, competence and perceptions of career advancement* (**Hypothesis 12**).

#### **7.4.1.9. Establishing construct validity for the psychosomatic well-being dimension**

Physical and mental health have been often investigated together when examining individual well-being, by acknowledging for example the impact that social support (Cohen & Janicki-Deverts 2009; Umberson and Montez 2010) or stress (Kessler and McLeod 1985; Uchino 2004) may have on individuals' health. Considering this and the association between positive mental health and individuals' physical/psychosomatic health (Taris et al., 2001) it is expected that:

*Positive mental health* will be negatively associated with *psychosomatic well-being*, and its distinct components of *musculoskeletal* and *fatigue* symptoms (**Hypothesis 13**).

#### **7.4.1.10. Establishing criterion-related validity for the psychosomatic well-being dimension**

Especially in computer-work design environments, research has highlighted the existence of adverse health trends that may be linked to established ergonomics and the embedded physical inactivity (Straker & Mathiassen, 2009). It has been suggested that effectively designing physical workspaces and training individuals about the importance of ergonomics can be crucial to improve individuals health and performance (e.g., Ketola et al., 2002; Nelson and Silverstein, 1998). Therefore, it is expected that:

Ergonomics will predict *psychosomatic well-being*, and its distinct components of *musculoskeletal* and *fatigue* symptom (**Hypothesis 14**).

## **7.5. Method**

### **7.5.1. Design**

Similarly to the Pilot study (Chapter 6), an online cross-sectional survey which was approximately 20-minutes long was used to collect data. The variables collected included but were not limited to the E-Work Well-being (EWW) scale, and relevant existing validated scales concerning well-being such as psychological distress, technostress, detachment from work (see 7.3.4. Section: Materials/Measures for more information). Demographics such as gender, age, main location of work were also collected (see Table 7.7. for more details).

### **7.5.2. Procedure**

A snowball sampling method was used to disseminate the study within U.K. employees, with the study being advertised through social media (e.g., LinkedIn, Twitter) and researchers' networking contacts. Participants were initially presented with relevant information about the study and had to declare their consent to take part. A Gatekeeper letter (see Appendix T) was used to explain the nature and purpose of the study to HR managers of organisations. They were, then, asked to share the survey link with their staff and encourage them to take part. Individuals, who considered themselves to be eligible to participate used the survey link to access the study. They were then presented with relevant information about the study and had to declare their consent to take part (see Appendix U for Participant Information Sheet and Consent Form). Once they have completed the survey, individuals could voluntarily provide their emails to enter the prize draw for a £50 Amazon voucher. Participants were informed about their right to withdraw their answers, at any point, without a given reason during the study, or within two weeks from their participation. Their answers were held anonymously online, in password-protected files. At the end of the study, participants were debriefed (see Appendix T for

Debriefing statement). The data collection lasted for six months. Ethical approval from Coventry University Ethics Committee to which the PhD student and research team are affiliated has been granted (see Appendix U for Ethics certificate).

### **7.5.3. Participants**

In total, 399 U.K. employees were recruited. Participants had a mean age of 39.80 ( $SD = 11.93$ ) and 231 (57.9%) of them were female. The three most often reported occupations were information technology (14.8%), teaching and education (14.5%), and other (11.3%; Table 7.7. provides a more detailed representation of the occupations in the sample). The majority of the participants claimed that they worked additional hours (79.7%). On a 5-point Likert scale ranging from *Never* to *Very frequently /all the time*, individuals indicated highly frequent use of ICT for work purposes; both during normal hours ( $M = 4.74$ ,  $SD = .66$ ) and outside hours ( $M = 4.21$ ,  $SD = .88$ ). The mean hours individuals e-worked remotely per week were 15.40 ( $SD = 11.54$ ). The office was the most cited work location ( $M$  hours per week = 19.01,  $SD = 14.90$ ), followed by employees' homes ( $M$  hours per week = 16.80,  $SD = 36.20$ ). Table 7.7. presents all the demographic information about the population recruited.

### **7.5.4. Exclusion/Inclusion criteria**

Similarly to the Pilot study (Chapter 6), there was no pre-selection of participants. However, the participants who volunteered to participate were advised to continue with the survey completion only if they were spending at least a portion of their working time away from their head office, with this including working from home, or working from another site of the company, hotel or train; making use of technology to stay connected to their workplace. In addition, demographic information collected from the participants as they had to claim how many hours they approximately spent e-working remotely per

week, indicating the split of their time within different locations (i.e., main office location, home, client site, other location such as cafes and hotels).

Table 7.7.

*Demographic information for the main study*

<b>Gender</b>	Female	231	57.9%
	Male	168	42.1%
	Total	399	
<b>Age</b>	<i>M</i> = 39.80	<i>SD</i> = 11.93	
<b>Marital Status</b>	Single	87	21.8%
	Married/ Civil	180	45.1%
	Partnership		
	Divorced	17	4.3%
	Widowed	5	1.3%
	Cohabiting	73	18.3%
	In a relationship	37	9.3%
<b>Job level</b>	Senior management	41	10.3%
	Middle-level management	82	20.6%
	First-level management	77	19.3%
	Non-management	199	49.9%
<b>Basis of employment</b>	Full-time	285	71.4%
	Part-time	74	18.5%
	Self-employed	29	7.3%
	Full-time student	9	2.3%
	Part-time student	2	0.5%
<b>Occupation</b>	Information technology		14.8%
	Teaching and education		14.5%
	Other		11.3%
	Business, consulting, and management		9.8%
	Research/Science		8.5%
	Engineering and manufacturing		7.8%
	Healthcare		7.5%
	Sales		3.3%
	Charity and voluntary work		3.0%
	Recruitment and HR		2.8%
	Marketing, advertising and PR		2.5%
	Social care		2.3%
	Retail		2.3%
	Property and construction		1.8%
	Law		1.8%

	Transport and logistics		1.8%
	Energy and utilities		1.3%
	Hospitality		1.0%
	Media and publishing		1.0%
	Leisure, sport and tourism		1.0%
	Environment and agriculture		0.3%
<b>Work extra hours</b>	Yes	318	79.7%
	No	81	20.3%
<b>Using ICTs during normal hours</b>	$M = 4.74$	$SD = .656$	
<b>Using ICTs outside normal hours</b>	$M = 4.21$	$SD = .884$	
<b>Remote e-working</b>	Hours e-work per week ( $N = 380$ )	$M = 15.40$	$SD = 11.54$
	Hours working from the main office ( $N = 381$ )	$M = 20.45$	$SD = 13.93$
	Hours e-working from home ( $N = 381$ )	$M = 14.31$	$SD = 15.93$
	Hours e-working from a client site ( $N = 380$ )	$M = 3.28$	$SD = 7.34$
	Hours e-working from other locations (e.g. cafes, hotels, public transport) ( $N = 384$ )	$M = 2.21$	$SD = 4.65$

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### 7.5.5. Materials/Measures

The main study presented in this chapter included, the revised 71-items E-Work Well-being scale (Appendix S). It also included the revised 22-items E-Work Life scale (Appendix T), to meet one of the main aims of this thesis and provide additional evidence to the preliminary validation of the scale (Grant et al. 2019). Some of the measures included were also used in the pilot study (i.e., Chapter 6). In particular, similarly to the pilot study, the constructs of *positive mental health* (Stewart-Brown et al., 2009), *sleep's quality/problems* (Morin, 1993), *detaching from work* (Cropley et al., 2012), *health and safety issues/ ergonomics* (as developed by the PhD researcher), and *self-efficacy* (Schwarzer & Jerusalem, 1995) were again investigated (see Chapter 6 for a reference). The section below presents the newly introduced measures, used in the main study.

*Manager support for teleworkers (i.e., remote e-workers)* was measured using an adapted version of Lee and Kim's (1992) 4-item scale (cited in Aboelmaged & Subbaugh, 2012). This measure captures managers' support, encouragement, and attitudes towards the remote e-working practice. Individuals were asked to rate how much they agreed, on a 5-point Likert scale (from *Strongly disagree* to *Strongly agree*) with the provided statements. It is worth mentioning that, for consistency purposes, the term remote e-working was used instead of the term telework (as it was used by Lee & Kim, 1992). An example item was *'My manager considers teleworking (remote e-working) as a beneficial work alternative'*. Scale's good level of reliability has been confirmed (Cronbach's alpha = .81; Aboelmaged & Subbaugh, 2012).

*Technostress* was measured using Tarafdar et al.'s (2007) technostress creators scale. Three out of the five sub-categories of techno-creators were examined. In particular these were: 'techno-overload', 'techno-invasion', and 'techno-complexity'. '*Techno-overload*' refers to cases where technology can increase individuals' workload, forcing them to work at a much faster pace. '*Techno-invasion*' refers to the situations where the technology use creates this expectation that individuals are connected to their work even outside working hours, which then invades personal life. Lastly, '*techno-complexity*' refers to the cases where individuals do not feel competent enough to use technology and handle their jobs satisfactorily. These techno-stressors were thoroughly discussed within interviewees in Chapter 4, and thus considered to be relevant. Individuals were asked to rate on a 5-point Likert scale ranging from *Strongly disagree* to *Strongly agree* how much they agreed with the provided statements. Reliability for all three categories of techno-creators was again supported to be good from previous research (i.e., techno-overload = .89), techno-invasion = .81, and techno-complexity = .84; Tarafdar et al., 2007).

### 7.5.6. Control variables

Similarly to the pilot study, the potential impact that demographic data could have on the relationship between remote e-working and well-being at work was taken into consideration, including control variables in the analyses. Considering previous research on the topic (Charalampous et al., 2018), the following control variables were considered when testing the hypotheses (performing correlations and regressions): *gender*, *working extra hours*, *hours of remote e-working per week*, and *main work locations*.

### 7.5.7. Plan of analyses

Data analysis performed will be presented in the following five sections:

- Section 7.4.1.: Descriptive statistics and a preliminary screening for normality of the data using IBM SPSS Statistics 25. When examining normality the scree plot, skewness and kurtosis of each item are considered. This was below  $\pm 2$  which is considered as acceptable suggesting data's normal univariate distribution (George & Mallery, 2010; Gravetter & Wallnau, 2014). The Kaiser-Mayer-Olkin and the Barlett's test is conducted to examine the suitability of conducting factor analysis.
- 7.4.2.: Confirmatory Factor Analyses using Mplus 8.0 (Muthén & Muthén, 2016) is performed, providing Factor Scores Determinacies to evaluate the reliability of each well-being factor (Tabachnick & Fidell, 2007). Three alternative models posited by Van Horn et al. (2004) are tested using Mplus:

**Model 1:** One-factor model in which all 71 items (see Appendix S) of work-related well-being load on one underlying factor (i.e., well-being). This model proposes that work-related well-being is a one-dimensional phenomenon.

**Model 2:** Five-factor oblique model with a third-order overall factor on which the five second-order factors load. This model is in line with the suggestion that work-

related well-being is not a one-dimensional concept, but it manifests itself in five facets instead.

**Model 3:** Five-factor oblique model indicating the existence of five (second-order) factors as presented in the work-related well-being model (i.e., affective, cognitive, social, professional, and psychosomatic), which correlate freely.

- Section 7.4.3.: Further validation and confirmation of the factorial structure of the updated 22-item version of the E-Work Life scale as developed by Grant et al. (2019).
- Section 7.4.4.: EWW scale's construct validity is being assessed using correlations between scores on the scale and on relevant measures.
- Section 7.4.5.: Criterion-related validity of the EWW scale is also being assessed in through hierarchical multiple regression analysis.

## **7.6. Results**

### **7.6.1. Preliminary statistics**

The descriptive statistics for the E-Work Well-being (EWW) scale items are presented in Appendix X. Initial screening of the EWW scale suggested that the items were normally distributed (*Mean skewness* = .65, *Mean kurtosis* = .69). Similarly to the pilot study (Chapter 6) items were treated as continuous normal variables. As a result of having normal, continuous variables, Maximum Likelihood (ML) estimation was used. Similarly to the pilot study, the Kaiser-Mayer-Olkin (KMO) was used to check for the suitability of conducting factor analysis, examining sampling adequacy. Additionally, Barlett test also assessed data sphericity. For each sub-dimension of the EWW scale the KMO was above the acceptable limit of .5, and the Barlett test for sphericity was significant ( $p < .001$ ), supporting the suitability of conducting factor analysis (Field, 2013). Table 7.8.



presents the descriptive statistics, reliability and correlations of all validated measures included in the main study.

Table 7.8.  
*Descriptive statistics, reliability and correlations for all validated measures*

	Mean (SD)	1	2	3	4	5	6	7	8	9
1. Positive Mental Health	3.53 (.73)	(.91)								
2. Psychological Detachment	3.15 (.87)	.39**	(.59)							
3. Sleeping problems	2.23 (.85)	-.42**	-.38**	(.90)						
4. Ergonomics	2.79 (.95)	-.27**	-.28**	.16**	(.84)					
5. Managerial support	3.54 (.90)	.34**	.19**	-.16**	-.18**	(.89)				
6. General self-efficacy	3.91 (.55)	.50**	.13**	-.20**	-.18**	.20**	(.91)			
7. Technology Overload	2.73 (.90)	-.19**	-.38**	.22**	.09	-.10*	-.13**	(.89)		
8. Technology Invasion	2.36 (.99)	-.28**	-.51**	.29**	.27**	-.12*	-.21**	.63**	(.86)	
9. Technology complexity	2.16 (.89)	-.23**	-.22**	.22**	.22**	-.17**	-.34**	.34**	.45**	(.89)

Notes. Cronbach's alphas coefficient listed on diagonal (in parentheses); \* $p < .05$ ; \*\* $p < .001$

### 7.6.2. Confirmatory Factor Analyses – Structural models

As according to Kenny's (2015) suggestion the RMSEA of the null model was tested. Since the RMSEA was less than 0.158 ( $\chi^2 = 20439.110$ ,  $df = 2485$ ,  $p < .001$ , CFI = .00; RMSEA = .135 (C.I.: .133 – .136),  $p < .001$ , SRMR = .26), then the CFI was not needed to be computed and is not presented in the findings below. In accordance with the original analyses conducted by Van Horn et al. (2014), three a priori models were tested.

First, Model 1 was examined which proposed an one-factor model in which all 71 items (see Appendix S) of work-related well-being loaded on one underlying factor (i.e., well-being). This model had a very poor fit ( $\chi^2 = 14222.037$ ,  $df = 2414$ ,  $p < .001$ , RMSEA = .11 (C.I.: .109 – .112),  $p = .001$ , SRMR = .134).

The second model (i.e., Model 2) investigated whether the five proposed factors (i.e., emotional, cognitive, social, professional, and psychosomatic) tapped the same

phenomenon, by setting a second-order factor (i.e., well-being). However, this model did not converge.

The third model (i.e., Model 3) examined an oblique five-factor model in which the factors of affective, cognitive, social, professional, and psychosomatic correlate freely. Although this model showed an improvement, it still did not have a good fit as the test for close fit for RMSEA was significant ( $\chi^2 = 5976.558$ ,  $df = 2394$ ,  $p < .001$ , RMSEA = .06 (C.I.: .059 – .063),  $p < .001$ , SRMR = .10). The modification indices were then examined to explore whether there were additional parameters to be considered. All the items had above the acceptable cut-off point loadings (<.32) except the '*feeling proud*' item (i.e., EM4, .32). This item was thus deleted, but the fit of the model changed only slightly ( $\chi^2 = 5517.461$ ,  $df = 2321$ ,  $p < .001$ , RMSEA = .06 (C.I.: .057 – .061),  $p < .001$ , SRMR = .10). Also, the highest MI (104.824) was associated to the cross loading of '*feeling lonely*' (i.e., EM7) to the *social isolation* dimension. This makes conceptual sense as the feeling of loneliness is adequately captured by the social isolation dimension, which could consequently justify the redundancy of this item. This item was additionally deleted. Again, the deletion of this item did not improve the fit ( $\chi^2 = 5251.707$ ,  $df = 2255$ ,  $p < .001$ , RMSEA = .06 (C.I.: .056 – .060),  $p < .001$ , SRMR = .10) but it was considered theoretically relevant. As thoroughly discussed and justified in Chapter 3, the 14 highest correlated residuals, as indicated by the modification indices, were included in the model. All the correlated residuals included were within the same theoretical dimension, and it was checked that they made conceptual sense (see Table 7.9. for exact correlated residuals included). They were also above .10 (Kline, 2015). The complexity and the length of the scale, along with the fact that all correlations included concerned items tapping the same sub-dimension justified this decision. Although not exceptional, the 69-item solution,

including 14 correlated residuals fitted the data well ( $\chi^2 = 4605.685$ ,  $df = 2241$ ,  $p < .001$ , RMSEA = .05 (C.I.: .049 - .054),  $p = .13$ , SRMR = .10).

Table 7.9.

*Goodness of fit statistics CFA for Model 3 – Five factor oblique solution*

Measures	$\chi^2$	Df	RMSEA	SRMR
71-item	5710.489	2392	.06 (.057 – .061), $p < .001$	0.10
70-item EM4 deleted	5517.461	2323	.06 (.057 - .061), $p < .001$	0.10
69-item solution EM4 & EM7 deleted	5251.707	2255	.06 (.056 - .060), $p < .001$	0.10
69-item solution EM4 & EM7 deleted; 14 correlations included	4605.685	2241	.05 (.049 - .054), $p = .13$	0.10

*Notes.* The correlated residuals included were: Emotion 1 with Emotion 6; Emotion 9 with Emotion 5; Job satisfaction 2 with Job satisfaction 1; Org. commitment 3 with Org. commitment 2; Rel. with supervisor 5 with Rel. with supervisor 4; Competence 2 with Competence 1; Competence 5 with Competence 4; Psychosomatic 3 with Psychosomatic 2; Emotion 10 with Emotion 2; Rel. with colleagues 3 with Rel. with colleagues 2; Career Dev. 5 with Career Dev. 4; Rel. with supervisor 2 with Rel. with supervisor 2; Isolation 3 with Isolation 1; Isolation 3 with Isolation 2 (see Appendix S for exact items).

Although the last model had a good fit, results were further questioned considering a very high correlation between the first-order factors of social and professional well-being (i.e., .97) and a very high MI associated with the covariance between emotional exhaustion and cognitive weariness (90.433).

Gaining a greater insight into the results, a more parsimonious model was identified, including three instead of five factors. In this model, the first dimension captured *the individual factors*, combining the emotional and cognitive well-being dimensions. More precisely, the constructs included under this dimension were emotions, job satisfaction, organisational commitment, emotional exhaustion and cognitive weariness. The second dimension captured *the interaction between the individual and the*

*organisation*, combining the social and professional well-being dimension. Therefore, the constructs included in this factor were: relationships with colleagues, relationship with supervisor, social isolation, autonomy, competence, and career development. Lastly, the third dimension captured *health* including the musculoskeletal and fatigue symptoms. The initial fit of the 3-factor oblique model (prior to the inclusion of any error covariance) was marginally adequate ( $\chi^2 = 5297.761$ ,  $df = 2261$ ,  $p < .001$ , RMSEA = .06 (C.I.: .056 - .060),  $p < .001$ , SRMR = .10).. However, similarly to the case of the 5-factor model, the examination of the modification indices highlighted further adjustments of the 3-factor model as well as additional parameters to be included.

Modification indices suggested that the organisational commitment sub-dimension was highly correlated with the *interaction between the individual and the organisation dimension* (i.e., social and professional well-being; 116.273); having the lowest loading to the affective dimension (i.e., .48). This recommended that the organisational commitment could be included in the *interaction between the individual and the organisation dimension*, instead to the *individual dimension* (i.e., and precisely the emotional dimension). Making this additional modification changed only slightly the fit ( $\chi^2 = 5432.785$ ,  $df = 2263$ ,  $p < .001$ , RMSEA = .06 (C.I.: .057 .061),  $p < .001$ , SRMR = .10) but the loading of the organisational commitment to this dimension was better (.76). As previously discussed, after checking the modification indices the inclusion of 15 correlated residuals in the model were added (i.e., 13 correlated residuals were between items tapping the same construct, and 2 of them were between sub-dimensions tapping the same dimension; see Table 7.10.). The fit of the model was exceptionally good ( $\chi^2 = 4355.985$ ,  $df = 2246$ ,  $p < .001$ , RMSEA = .05 (C.I.: .046 .051),  $p < .87$ , SRMR = .08), indicating an improvement from the 5-factor oblique model. Appendix Z shows the EWW scale item loadings and first-order factor loadings, in the three-factor oblique model.

Table 7.10.

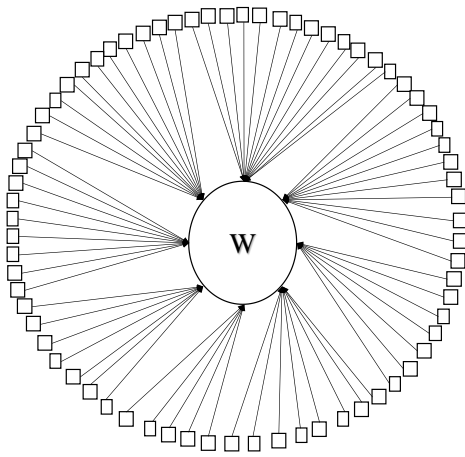
*Goodness of fit statistics CFA for Model 3 – Three factor oblique solution*

<b>Measures</b>	<b><math>\chi^2</math></b>	<b>Df</b>	<b>RMSEA</b>	<b>SRMR</b>
69-item	5297.761	2261	.06 (.056 -.060), $p < .001$	0.10
69-item. Comm inc. in Soc&Prof dimension	5432.785	2263	.06 (.057 .061), $p < .001$	0.10
69items, Comm inc. in Soc&Prof dimension. 15corr	4355.985	2246	.05 (.046 0.051), $p = .87$	0.08

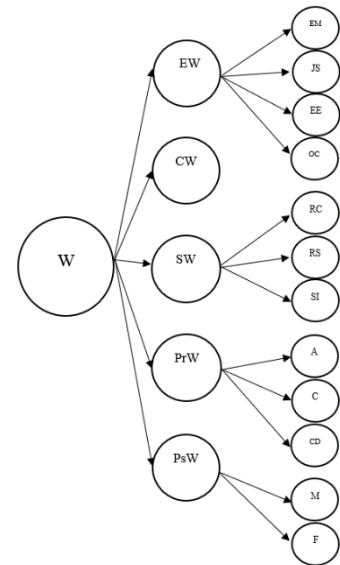
*Notes.* Comm. = Organisational commitment; Soc. = Social dimension ; Prof. = Professional dimension.

Correlated residuals included: Emotion 8 with Emotion 6; Emotion 9 with Emotion 5; Emotion 10 with Emotion 2; Job satisfaction 2 with Job satisfaction; Org. commitment 3 with Org. commitment 2; Cog. Weariness 2 with Cog. Weariness 1; Rel. with supervisor 5 with Rel. with supervisor 4; Competence 2 with Competence 1; Competence 5 with Competence 4; Psychosomatic 3 with Psychosomatic 2; Psychosomatic 4 with Psychosomatic 1; Psychosomatic 8 with Psychosomatic 7; Psychosomatic 10 with Psychosomatic 8; Isolation with Rel. with Colleagues; Cog. Weariness with Em. Exhaustion (see Appendix S for specific items).

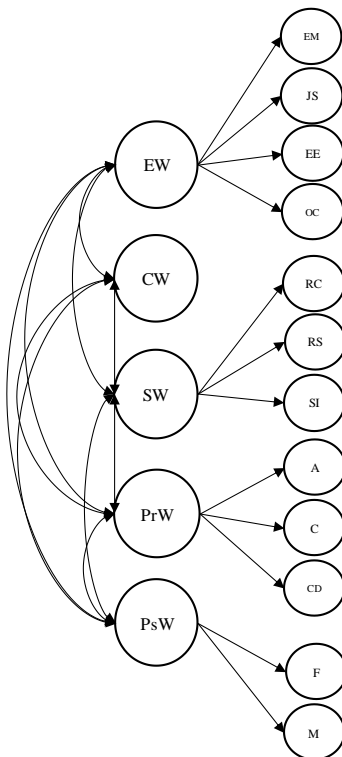
Comparing all the examined models (see Figure 7.2. for a summary) it can be concluded that the 3-factor oblique model provided the best fit, being also more parsimonious.



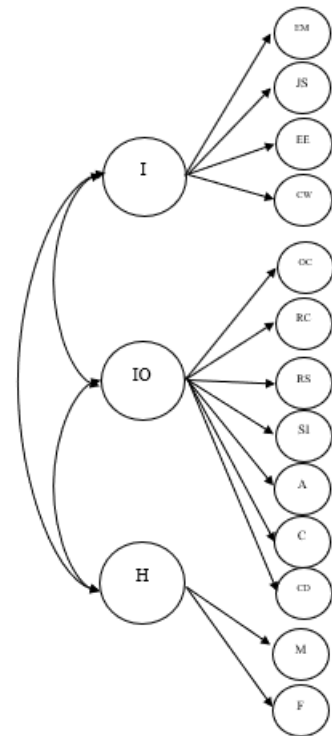
Model 1: A one-factor model in which all 71 items of work-related well-being load on one underlying factor



Model 2: A five-factor oblique model with a second-order overall factor on which the five first-order factors load.



Model 3: A five-factor oblique model indicating the existence of five factors which correlate freely.



Model 4: A three-factor oblique model indicating the existence of three factors which correlate freely.

*\*This model has 13 vs 12 constructs, as cognitive weariness collapsed from a dimension, to a sub-dimension.*

Figure 7.2. Well-being models assessed in the main study

As the Table 7.11. displays, all the distinct constructs of the EWW scale had very good Factor Determinacy scores, indicating scale's good reliability. Also, Table 7.12. presents correlation analysis on all EWW constructs and the main study variables.

Table 7.11.

*Factor determinacies for the EWW (sub)dimensions*

Dimension	Factor Determinacy score
Emotions	.92
Job satisfaction	.90
Emotional exhaustion	.96
Organisational commitment	.95
Cognitive weariness	.97
Relationships with colleagues	.95
Relationships with supervisor	.96
Social isolation	.93
Autonomy	.93
Competence	.91
Career Development	.96
Fatigue	.92
Musculoskeletal	.95

### 7.6.3. Further validation of the E-Work Life (EWL) scale

The present study allowed for an additional validation of the E-Work Life scale (EWL; Grant et al.2011; Grant et al.2019), which is consequently used in assessing EWW scale's construct and criterion-related validity. Out of the 22 items, only one slightly deviated from the normal distribution (i.e., Item 2 with kurtosis = 2.87), whereas the rest were normally distributed (*Mean skewness* = .66, *Mean kurtosis* = .68). Therefore, a Confirmatory Factor Analysis (CFA) was performed using maximum likelihood (ML) parameter estimates. The Kaiser-Mayer-Olkin (KMO) above the acceptable limit of .5, and the Barlett test for sphericity was significant ( $p < .001$ ), which supported the suitability of conducting factor analysis (Field, 2013). The descriptive statistics for the EWL scale items are presented in Appendix V, providing Means, SDs, skewness and kurtosis scores for all 22 items of the EWL scale.

Table 7.12.

*Correlations between the E-Work Wellbeing scale and validated measures used*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1.PE	1																										
2.NE	-.45**	1																									
3.JOB SAT.	.47**	-.22**	1																								
4.EM. EXH.	-.28**	.51**	-.19**	1																							
5.ORG. COMM.	.46**	-.20**	.35**	-.15**	1																						
6.COG. WEAR.	-.32**	.55**	-.15**	.66**	-.15**	1																					
7.REL. COLL.	.33**	-.35**	.30**	-.20**	.44**	-.25**	1																				
8.REL. SUP.	.37**	-.28**	.26**	-.27**	.53**	-.27**	.50**	1																			
9.SOC. ISO.	-.25**	.55**	-.16**	.29**	-.23**	.35**	-.56**	-.29**	1																		
10.AUT.	.39**	-.27**	.49**	-.19**	.44**	-.24**	.37**	.50**	-.20**	1																	
11.COMP.	.43**	-.19**	.33**	-.12**	.42**	-.27**	.36**	.38**	-.19**	.47**	1																
12.CAR. DEV.	.36**	-.24**	.29**	-.13**	.57**	-.14**	.49**	.60**	-.30**	.40**	.34**	1															
13.MUSC.	-.11*	.42**	-.01	.37**	-.02	.32**	-.05	-.06	.19**	.05	.01	-.05	1														

Continue



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
14.FAT.	-.24**	.52**	-.07	.52**	-.18**	.43**	-.19**	-.26**	.20**	-.11*	-.13**	-.15**	.65**	1													
15.TRUST	.27**	-.18**	.26**	-.19**	.39**	-.16**	.27**	.50**	-.19**	.37**	.27**	.41**	-.03	-.1**	1												
16.FLEX.	.19**	-.04	.37**	-.13**	.21**	-.10*	.17**	.26**	-.10*	.44**	.15**	.21**	.02	-.07	.53**	11											
17.WLI	-.43**	.45**	-.30**	.50**	-.25**	.41**	-.33**	-.31**	.35**	-.21**	-.22**	-.29**	.24**	.38**	-.16**	-.09*	11										
18.EFF.	.45**	-.31**	.44**	-.13**	.35**	-.30**	.39**	.29**	-.34**	.42**	.43**	.25**	-.02	-.11*	.31**	.29**	-.32**	11									
19.POS. MH	.45**	-.41**	.30**	-.27**	.54**	-.24**	.47**	.49**	-.30**	.38**	.41**	.53**	-.18**	-.41**	.30**	.22**	-.34**	.27**	1								
20.DFW	.22**	-.33**	.16**	-.42**	.12**	-.30**	.22**	.33**	-.15**	.17**	.09*	.20**	-.25**	-.40**	.20**	.10*	-.54**	.03	.38**	1							
21.SLEEP	-.24**	.33**	-.13**	.36**	-.19**	.27**	-.17**	-.22**	.18**	-.11*	-.17**	-.08*	.42**	.68**	-.19**	-.16**	.33**	-.19**	-.42**	-.37**	1						
22.ERG	-.20**	.27**	-.03	.27**	-.24**	.28**	-.21**	-.26**	.28**	-.07	-.09*	-.30**	.24**	.24**	-.18**	.05	.28**	-.09*	-.26**	-.27**	.15**	1					
23.SE	.31**	-.23**	.20**	-.14**	.33**	-.26**	.33**	.33**	-.17**	.34**	.48**	.31**	-.05	-.20**	.23**	.18**	-.17**	.34**	.50**	.13**	-.20**	-.18**	1				
24.MAN. SUP.	.30**	-.07	.34**	-.13**	.50**	-.13**	.30**	.51**	-.08*	.41**	.23**	.41**	.02	-.13**	.43**	.37**	-.20**	.29**	.34**	.19**	-.15**	-.17**	.20**	1			
25.TECH_ OVER.	-.17**	.27**	-.17**	.44**	-.10*	.37**	-.18**	-.19**	.26**	-.12**	-.11*	-.12**	.14**	.22**	-.20**	-.10*	.36**	-.15**	-.19**	-.37**	.21**	.09*	-.13**	-.10*	1		
26.TECH_INV.	-.24**	.32**	-.18**	.48**	-.13**	.35**	-.24**	-.28**	.30**	-.17**	-.18**	-.17**	.21**	.29**	-.21**	-.02	.52**	-.19**	-.28**	-.51**	.29**	.27**	-.20**	-.11**	.62**	1	
27.TECH_ COMP.	-.24**	.18**	-.10*	.26**	-.11*	.29**	-.24**	-.19**	.19**	-.21**	-.35**	-.18**	.15**	.21**	-.19**	-.10*	.22**	-.21**	-.22**	-.21**	.21**	.21**	-.33**	-.17**	.33**	.45**	1

Notes.  $N = 399$ . \* $p < .05$ , \*\* $p < .001$ , Pearson correlations were run. PE = Positive Emotions, NE = Negative Emotions, JOB SAT = Job Satisfaction, EM. EXH. = Emotional Exhaustion, ORG. COMM. = Organisational Commitment, COG. WEAR. = Cognitive Weariness, REL. COLL. = Relationships with colleagues, REL. SUP. = Relationship with supervisor, SOC. = Social Isolation, AUT. = Autonomy, COMP. = Competence, CAR. DEV. = Career Development, MUSC. = Musculoskeletal, FAT. = Fatigue, TRUST = Organisational Trust, FLEX. = Flexibility, WLI = Work Life Interference, EFF. = Job Effectiveness, POS. MH = Positive Mental Health, DFW = Detachment from Work, SLEEP = Sleep problems, ERG = Ergonomics, SE = Self efficacy, MAN. SUP. = Manager Support (with remote e-working), TECH. OVER. = Technology Overload, TECH INV. = Technology Invasion, TECH. COMP. = Technology Complexity.

Similarly to the EWW scale analyses, the RMSEA of the null model was tested, and was found to be greater than 0.158 ( $\chi^2 = 4744.888$ ,  $df = 231$ ,  $p < .001$ , CFI = .00; RMSEA = .221, CI .216 – .227,  $p < .001$ , SRMR = .30). Therefore, the CFI scores were computed and presented for all the models tested. The dimensionality of the EWL scale was investigated by means of CFA. Consistent with Grant et al. (2019) a four-factor solution was hypothesised. The version of the scale that has been examined is an updated version of the published version (Grant et al. 2019; see Appendix B).

As displayed in Appendix V, the initial model investigating the 4-factors solution of the 22-item scale did not adequately fit the data ( $\chi^2 = 740.657$ ,  $df = 203$ ,  $p < .001$ , CFI = .88; RMSEA = .08, (C.I.: .075 – .088), SRMR = .07). The item loadings showed that item EWORK1 (i.e., *'My organisation provides training in e-working skills and behaviours'*) was very low (.30) and thus removed (Tabachnick and Fidell, 2007). Once this item was deleted, the fit improved but was still not adequate ( $\chi^2 = 661.632$ ,  $df = 183$ ,  $p < .001$ , CFI = .89; RMSEA = .081, (C.I.: .074 – .088,  $p < .001$ ; SRMR = .06). When checking the modification indices the highest value (56.211) was associated with the covariance between item EWORK7 (i.e., *'My manager gives me total control over when and how I get my work completed when e-working'*) and item EWORK6 (i.e., *'When I'm not visible e-working remotely, my manager trusts me to work effectively'*). It is worth mentioning that these two items belonged to different dimensions (i.e., trust and flexibility respectively). The item EWORK7 was not considered a strong indicator of the construct, and was excluded by following analyses to avoid any conceptual and methodological ambiguity. This deletion provided an adequate fit to the model ( $\chi^2 = 489.915$ ,  $df = 164$ ,  $p < .001$ , CFI = .92; RMSEA = .07, (C.I.: .063 – .078,  $p < .001$ ), SRMR = .06). Four correlated residuals were included in the model, as these were between items belonging to the same dimensions (see Table 7.13.).

Table 7.13.

*Goodness of fit statistics CFA for E-Work Life scale*

Measures	$\chi^2$	Df	CFI	RMSEA	SRMR
22-item version	740.657	203	.88	.08 (.075-.088) $p < .001$	.07
21-item Del.EWORK1	661.632	183	.89	.08 (.074 - .088) $p < .001$	.06
20-item Del.EWORK1 & EWORK7	489.915	164	.92	.07 (.063- .078), $p < .001$	.06
20-item Del.EWORK1 & EWORK7 & 4corr.	373.659	160	.95	.06 (.050 -.066), $p = .05$	.05

Notes. Correlated residuals were included in the model: EWORK4 with EWORK6; E-WORK9 with EWORK10; EWORK18 with EWORK19; EWORK21 with EWORK22 (see Appendix T for specific items).

Thus, the final 20-item scale led to a good (and improved) fit of the data:  $\chi^2 = 399.327$ ,  $df = 161$ ;  $p < .001$ ), CFI = .94; RMSEA = .06 (C.I.: .053 -.068,  $p = .05$ , SRMR = .06). This model reproduces with a good approximation the covariances among the items of the EWL scale, with Factor Determinacies being also very good (*Trust* = .92, *Flexibility* = .94, *Work Life Interference* = .93 and *Effectiveness* = .94).

Table 7.12. presents the correlations between the EWL scale dimension and the EWW scale, and validated scales examined in this PhD thesis.

#### 7.6.4. Control checks

The potential role of socio-demographic variables was explored to identify potential confounds. Particularly, independent sample t-tests (to test gender differences,), ANOVAs (to test differences associated to main location of work), and correlations (to test differences associated to *working extra hours*, *hours of remote e-working per week*) were examined. The outcome variables considered for these control checks were the

EWV scale, the EWL scale and the validated measures used. Considering the length of this analysis, all t-test, correlation, and ANOVA results are presented in Appendix W, but a brief discussion is provided below.

The independent sample t-tests identified very few significant gender differences, between outcome variables. In particular, women statistically and significantly stated higher level of psychosomatic irritations and musculoskeletal issues compared to men, higher issues with their ergonomics, and lower levels of effectiveness. Thus, gender was controlled only in correlations and regressions which included outcome variables which showed a significant relationship.

Similarly to the pilot study, individuals were categorised based on the number of hours spent in each work location: 1 = Office as the main work location; 2 = Home as the main work location; 3 = Main work location as other (e.g., client site). ANOVA results indicated that individuals working for the majority of their time in an office location had lower levels of job satisfaction, greater negative emotions, less managerial support relating to remote e-working, more flexibility, and more effectiveness compared to employees working mainly from home. Also individuals who had office as a main location experienced lower levels of fatigue and lower levels of negative emotions compared to individuals working mainly from other locations. It is worth noting that individuals worked mainly from other locations were 45 (11.3% in the total sample), compared to 258 (64.7%) worked mainly in the office, and 96 (34.1%) working mainly from home; something that may restrict our ability to reach to certain conclusions about this sample of individuals. Hence, the main work location was only controlled in analysis including the respective variables.

Correlation analysis indicated no significant relationships between the variable of working extra hours, so this variable was taken out from following analysis. Hours

individuals e-worked remotely per week were positively associated with job satisfaction, negative and positive emotions, autonomy, competence, and negatively associated with flexibility and effectiveness. These variables were then included in the correlation and regression models when appropriate (i.e., the control variable was not included if a statistically significant relationship was not supported between the control and the outcome variables assessed).

#### **7.6.5. Examining construct validity.**

The present study provided evidence of construct validity for the E-Work Well-being (EWW) scale. The scores for the dimensions/sub-dimensions of the EWW scale were correlated with scores of existing validated scales assessing similar constructs. Correlation analyses were performed by using Partial correlations, which allowing controlling for relevant variables. While, Table 7.12. illustrates all the correlations between the EWW (sub)dimensions and the measures used in this study, the section below makes a specific reference to the correlations which were used in the hypotheses. Results, overall, suggested that the relationships between the EWW dimensions and existing measures were in their majority significant and in the direction hypothesised.

It is worth mentioning though, that the hypotheses were based on the five-dimensional model suggested by Van Horn et al. (2004). However, the results of this study supported a more parsimonious three-dimensional model (see Figure 7.3.). In order to align the correlations to the newly proposed theoretical model, dimensions were grouped together, meaning that if a relationship was expected to exist for a specific dimension, it would now be expected to exist for any other integrated dimension(s) too. For example, the hypotheses regarding the initially proposed affective well-being dimension, will now exclude the sub-dimension of the organisational commitment, and include the cognitive weariness component. Simultaneously, relationships checked for

the cognitive weariness, will now be checked for the affective dimension too (except from organisational commitment).

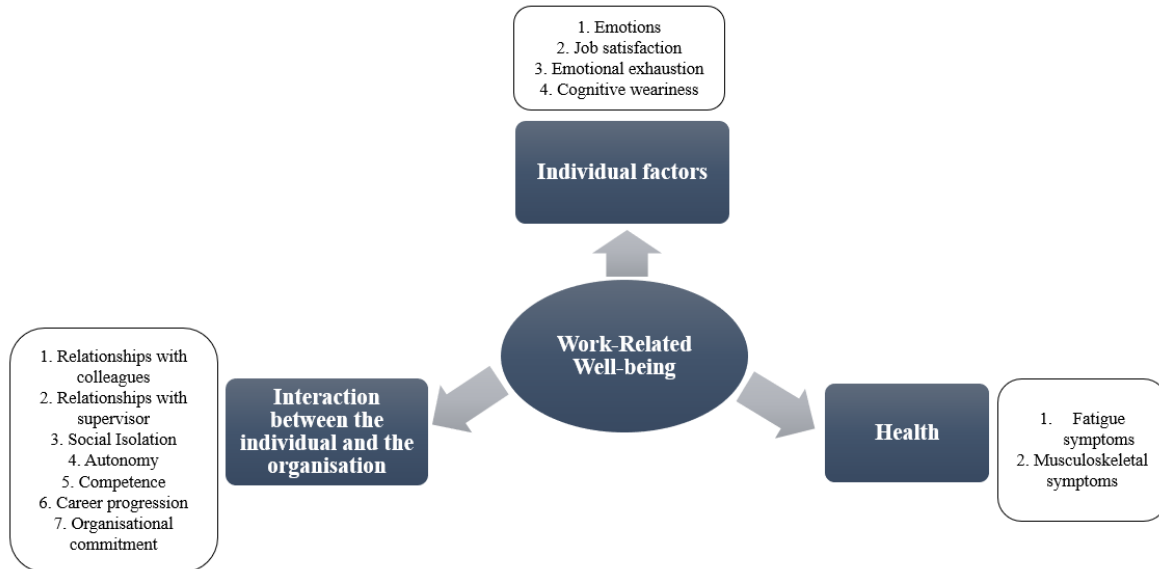


Figure 7.3. Three-factor work-related well-being model, as adjusted from Van Horn et al.'s (2004) five-dimensional model.

**7.6.5.1. Construct validity for the Individual factors: including positive emotions, negative emotions, job satisfaction, emotional exhaustion, and cognitive weariness.**

As can be viewed in Table 7.14. below, both *positive mental health* and *detachment from work* were positively correlated with the sub-dimensions of *positive emotions* and *job satisfaction*; and negatively correlated with *emotional exhaustion*, *negative emotions*, and *cognitive weariness*. Thus, **Hypothesis 1** and **Hypothesis 6** were respectively confirmed. For both hypotheses hours of remote e-working per week, and remote e-workers main work location were controlled in the analysis as they were significantly correlated with the outcome variables.

Table 7.14.

*Partial correlations supporting construct validity for the Individual factors*

	1	2	3	4	5	6	7
Job satisfaction	1						
Emotional exhaustion	-.20**	1					
Negative emotions	-.27**	.53**	1				
Positive emotions	.45**	-.27**	-.47**	1			
Cognitive weariness	-.15**	.66**	.57**	-.32**	1		
Positive mental health	.34**	-.26**	-.42**	.47**	-.23**	1	
Detachment from work	.22**	-.42**	-.35**	.26**	-.30**	.37**	1

Notes. Correlations were controlled for remote e-working per week, and main work location. \* $p < .05$ .

\*\* $p < .001$ .

**7.6.5.2. Construct validity for the Interaction between the individual and the organisation factor: including social relationships with colleagues and supervisors, social isolation, competence, autonomy, career development, and organisational commitment).**

Organisational trust, manager support for remote e-working, and self-efficacy were positively associated with *relationships with colleagues, relationship with supervisor, autonomy, competence, career development and organisational commitment* (see Table 7.15.). Simultaneously, they were negatively associated with *social isolation*. For all correlations performed the hours individuals did remote e-working per week and main work location were controlled. Hence, **Hypothesis 8, Hypothesis 9, and Hypothesis 11** were respectively confirmed.

Table 7.15.

*Partial correlations supporting construct validity for the Interaction between the individual and the organisation factor*

	1	2	3	4	5	6	7	8	9	10
1.REL.										
COLL.	1									
2.REL.										
SUP.	.49**	1								
3.SOC.										
ISO.	-.55**	-.28**	1							
4.AUT.	.38**	.51**	-.21**	1						
5.COMP.	.37**	.39**	-.20**	.45**	1					
6.CAR.										
DEV.	.48**	.6**	-.30**	.41**	.35**	1				
7.ORG.										
COMM.	.44**	.53**	-.22**	.42**	.42**	.57**	1			
8.TRUST	.28**	.51**	-.20**	.38**	.29**	.41**	.38**	1		
9.MAN.										
SUP.	.31**	.53*	-.09**	.39**	.21**	.43**	.49**	.43**	1	
10.SE	.28**	.51**	-.20**	.38**	.29**	.41**	.38	.27**	.43**	1

*Notes.* Correlations were controlled for remote e-working per week, and main work location.

\* $p < .05$ ., \*\* $p < .001$ . REL. COLL. = Relationship with colleagues, REL. SUP. = Relationship with supervisor, SOC. ISO. = Social Isolation, AUT. = Autonomy, COMP. = Competence, CAR. DEV. = Career Development, ORG. COMM. = Organisational Commitment, TRUST = Organisational Trust, MAN. SUP. = Managerial Support, SE = Self-efficacy.

#### **7.6.5.3. Construct validity for the Health factor: including musculoskeletal and fatigue symptoms.**

In accordance with **Hypothesis 13**, the sub-dimensions of *fatigue* and *musculoskeletal* symptoms were negatively and significantly correlated with positive mental health (see Table 7.16.).



Table 7.16.

*Partial correlations supporting construct validity for the Individual factors*

	1	2	3
Fatigue	1		
Musculoskeletal	-.20**	1	
Positive mental health	-.27**	.53**	1

*Notes.* Correlations were controlled for remote e-working per week, and main work location.

\* $p < .05$ ., \*\* $p < .001$

The magnitudes of these correlations suggest a good, but not identical conceptual overlap between EWW (sub)dimensions and validated scales, providing evidence of its construct validity.

#### **7.6.6. Examining criterion-related (or predictive) validity**

Hierarchical multiple regression analysis was used to investigate the EWW scale's criterion-related (i.e., predictive) validity. As mentioned in Chapter 3, when examining criterion-related validity, researchers are not interested about whether the construct under study precedes, coincides, or follows the criterion (e.g., behaviour), but they are interested about how strong the relationship is (DeVellis. 2016). Equally to the construct validity checks, the hypotheses which were based on the five-dimensional model suggested by Van Horn et al. (2004) had to be adjusted to reflect the parsimonious three-dimensional model supported (see Figure 7.3.). To align the regressions run to the newly proposed theoretical model, dimensions were grouped together. This meant, that if a predictive relationship was expected to exist for a specific dimension, it would now be expected to exist for any integrated dimension(s). For example, to test the hypotheses regarding the initially proposed affective well-being dimension, organisational commitment will be excluded, and cognitive weariness will be included instead. At the same time, when testing hypotheses that concerned the cognitive weariness the affective well-being

dimension was included in the regressions too (i.e., positive and negative emotions, job satisfaction, emotional exhaustion/ excluding from organisational commitment).

#### ***7.6.6.1. Checking assumptions before conducting regression analysis***

Before conducting regression analyses to assess criterion-related validity, Field's (2013) list of assumptions was checked, to ensure than none of the assumptions were violated by the data (see section 6.5.4.4.). Assumptions were overall met, and it is going to be acknowledged when otherwise. The variance inflation factor (VIF) which tested multicollinearity, and tolerance statistics were within acceptable limits proposed by Field (2013; i.e.,  $VIF < 10$ ; tolerance  $> 1$ ). Therefore, the regression models were not biased.

#### ***7.6.6.2. Criterion-related validity for the Individual factors: including positive emotions, negative emotions, job satisfaction, emotional exhaustion and cognitive weariness.***

Flexibility and the three components of technostress (i.e., technology overload, technology invasion, and technology complexity) statistically and significantly predicted the *individual factors* (i.e., negative emotions, positive emotions, job satisfaction, emotional exhaustion, and cognitive weariness). flexibility did not statistically significantly correlated with negative emotions though ( $r = .05$ ), violating one of the assumptions, and was thus removed from one of the regression analysis (see Table 7.12.). The aspects of technology complexity, technology overload, and technology invasion accounted for 14% of the explained variance in negative emotions (see Table 7.17.). Also, the aspects of technology complexity, technology overload, and technology invasion accounted for 11% in the explained variance of positive emotions (see Table 7.18.); 21% in the explained variance of job satisfaction (see Table 7.19.); 27% in the explained variance of emotional exhaustion (see Table 7.20); and 18% in the explained variance of cognitive weariness levels (see Table 7.21.). The main work location, and hours of remote

e-working per week were controlled in all regressions run, but only significantly contributed to negative emotions explained variance (4%), positive emotions (2%), and job satisfaction (6%). Thus, **Hypothesis 2** and **Hypothesis 7** were respectively confirmed.

Table 7.17.

*Multiple regression analyses predicting negative emotion*

	Model 1		Model 2	
	$\beta$	$t$	$\beta$	$t$
Main work location	.14	<b>2.40*</b>	.15	<b>2.78*</b>
Hours of remote e-working per week	.10	1.68	.08	1.56
Technology overload			.13	<b>2.15*</b>
Technology invasion			.21	<b>3.18**</b>
Technology complexity			.06	1.07
<i>Adjusted R<sup>2</sup></i>	.04		.14	
<i>F</i>	<b>7.88**</b>		<b>13.63**</b>	

\* $p < .05$ . \*\* $p < .001$

Table 7.18.

*Multiple regression analyses predicting positive emotions*

	Model 1		Model 2	
	$\beta$	$t$	$\beta$	$t$
Main work location	-.06	-.96	-.07	-1.24
Hours of remote e-working per week	.16	<b>2.82*</b>	.14	<b>2.47*</b>
Technology overload			-.01	-.09
Technology invasion			-.16	<b>-2.42*</b>
Technology complexity			-.15	<b>-2.69*</b>
Flexibility			.17	<b>.3.36*</b>
<i>Adjusted R<sup>2</sup></i>	.02		.11	
<i>F</i>	<b>4.06*</b>		<b>8.88**</b>	

\* $p < .05$ . \*\* $p < .001$

Table 7.19.

*Multiple regression analyses predicting job satisfaction*

	Model 1		Model 2	
	$\beta$	<i>t</i>	$\beta$	<i>t</i>
Main work location	.01	.17	.01	.12
Hours of remote e-working per week	.25	<b>4.49**</b>	.20	<b>3.83**</b>
Technology overload			-.04	-.72
Technology invasion			-.17	<b>-2.72*</b>
Technology complexity			-.03	-.58
Flexibility			.35	<b>7.43**</b>
<i>Adjusted R<sup>2</sup></i>	.06		.21	
<i>F</i>	<b>13.31**</b>		<b>17.87**</b>	

\**p* < .05. \*\**p* < .001

Table 7.20.

*Multiple regression analyses predicting emotional exhaustion*

	Model 1		Model 2	
	$\beta$	<i>t</i>	$\beta$	<i>t</i>
Main work location	.01	.16	.03	.53
Hours of remote e-working per week	-.03	-.51	-.03	-.63
Technology overload			.21	<b>3.65**</b>
Technology invasion			.34	<b>5.59**</b>
Technology complexity			.04	.72
Flexibility			-.10	<b>-2.20*</b>
<i>Adjusted R<sup>2</sup></i>	.01		.27	
<i>F</i>	.13		<b>24.05**</b>	

\**p* < .05. \*\**p* < .001

Table 7.21.

*Multiple regression analyses predicting cognitive weariness*

	Model 1		Model 2	
	$\beta$	$t$	$\beta$	$t$
Main work location	-.05	-.03	-.03	-.57
Hours of remote e-working per week	.02	.02	.03	.58
Technology overload			.23	<b>3.81**</b>
Technology invasion			.13	1.99
Technology complexity			.16	<b>3.06*</b>
Flexibility			-.06	-1.29
<i>Adjusted R<sup>2</sup></i>	.00		.18	
<i>F</i>	.35		<b>14.36**</b>	

\* $p < .05$ . \*\* $p < .001$ 

According to **Hypothesis 3** *positive emotions*, *negative emotions*, *job satisfaction*, *emotional exhaustion*, and *cognitive weariness* statistically significantly predicted work-life interference remote e-workers experienced. Except from cognitive weariness which was not significant, all variables added statistically significantly to the prediction. The *Individual factors* then, accounted for 37% in individuals' work-interference levels. Regardless of the main work location and hours of remote e-working per week being controlled for in the regression, they were not found to statistically contribute to the prediction.

Table 7.22.

*Multiple regression analyses predicting work life interference*

	Model 1		Model 2	
	$\beta$	$t$	$\beta$	$t$
Main work location	.04	.69	.01	.23
Hours of remote e-working per week	-.02	-.28	.05	1.03
Negative emotions			.12	<b>2.20*</b>
Positive emotions			-.21	<b>-4.28**</b>
Job satisfaction			-.13	<b>-2.73*</b>
Emotional exhaustion			.36	<b>6.43**</b>
Cognitive weariness			.02	.73
<i>Adjusted R<sup>2</sup></i>	.00		.37	
<i>F</i>	.24		<b>33.32**</b>	

\* $p < .05$ . \*\* $p < .001$ 

*Negative emotions, positive emotions, job satisfaction, emotional exhaustion, cognitive weariness, relationship with colleagues, relationship with supervisors, social isolation, autonomy, competence, and career development* predicted remote e-workers' job effectiveness (supporting **Hypothesis 4** and **Hypothesis 12**). As can be viewed in Table 7.23., the *Individual factors* along with the *Interaction between the individual and organisation* factor predicted 43% of the job effectiveness. The variables of main work location, hours of e-working per week, and gender added significantly to the prediction, accounting for 5% of the total explained variance.

Table 7.23.

*Multiple regression analyses predicting Job effectiveness*

	Model 1		Model 2	
	$\beta$	$t$	$\beta$	$t$
Main work locations	-.03	-.55	-.01	-.29
Hours of e-working per week	.23	<b>4.16**</b>	.15	3.09
Gender	-.11	<b>-2.13*</b>	-.1	-2.42
Negative emotions			-.04	-.70
Positive emotions			.14	<b>2.59**</b>
Job satisfaction			.19	<b>3.81**</b>
Emotional exhaustion			.21	<b>3.82**</b>
Cognitive weariness			-.2	<b>-3.39**</b>
Relationship with colleagues			.09	1.54
Relationship with supervisors			-.01	-.09
Social isolation			-.18	<b>-3.28**</b>
Autonomy			.11	<b>2.09*</b>
Competence			.13	<b>2.68**</b>
Career development			-.11	<b>-2.00*</b>
Organisational commitment			.09	1.68
<i>Adjusted R<sup>2</sup></i>	.05			.43
<i>F</i>	<b>8.19**</b>			<b>18.41**</b>

\* $p < .05$ . \*\* $p < .001$ 

*Positive emotions, job satisfaction, emotional exhaustion, cognitive weariness, relationship with colleagues, relationship with supervisors, social isolation, autonomy, competence, career development and organisational commitment* predicted remote e-workers' *sleep problems*. Thus, **Hypothesis 5** and **Hypothesis 10** were confirmed. The construct of career development was excluded from the multiple regression as it was not statistically and significantly linked to sleep problems ( $p = -.09$ ; see Table 7.12.). The prediction was statistically significant with the aforementioned sub-dimensions

accounting for 16% of the sleep problems variance. However, only negative emotions, emotional exhaustion, relationship with supervisor, and career development contributed significantly to the prediction ( $p < .05$ ), whereas the rest did not.

Table 7.24.

*Multiple regression analyses predicting sleep problems*

	Model 1		Model 2	
	$\beta$	$t$	$\beta$	$t$
Hours of e-working per week	-.01	-.12	0	-.08
Main work locations	-.03	.54	-.01	-.11
Negative emotions			.19	<b>2.69*</b>
Positive emotions			-.05	-.74
Job satisfaction			0	.06
Emotional exhaustion			.28	<b>4.19**</b>
Cognitive weariness			-.07	-1.01
Relationship with colleagues			-.03	-.39
Relationship with supervisors			-.07	-1.17
Social isolation			-.02	-.35
Autonomy			.1	1.61
Competence			-.08	-1.34
Career development			-.06	-.91
Organisational commitment			.19	2.69
<i>Adjusted R<sup>2</sup></i>	-.00		.16	
<i>F</i>	.16		<b>6.36**</b>	

\* $p < .05$ . \*\* $p < .001$

As **Hypothesis 14** suggested, not having appropriate ergonomics accounted for 7% of the explained variance in the musculoskeletal symptoms, and 12.96% of the explained variance in the fatigue symptoms (see Table 7.25. and 7.26. respectively). Gender was controlled in both regressions run, but it only statistically and significantly contributed when predicting the musculoskeletal symptoms.



Table 7.25.

*Multiple regression analyses predicting musculoskeletal symptoms*

	Model 1		Model 2	
	$\beta$	<i>t</i>	$\beta$	<i>t</i>
Gender	-.15	<b>-2.99*</b>	-.12	<b>-2.25*</b>
Ergonomics			.23	<b>4.66**</b>
<i>Adjusted R<sup>2</sup></i>	.02		.07	
<i>F</i>	<b>8.97*</b>		<b>15.58**</b>	

*Note: \*p < .05. \*\*p < .001*

Table 7.26.

*Multiple regression analyses predicting fatigue*

	Model 1		Model 2	
	$\beta$	<i>t</i>	$\beta$	<i>t</i>
Gender	-.07	<b>-1.37*</b>	.09	-.78
Ergonomics			.05	<b>4.89**</b>
<i>Adjusted R<sup>2</sup></i>	.00		.06	
<i>F</i>	1.87		<b>12.96**</b>	

*Note: \*p < .05. \*\*p < .001*

Overall, the presented regressions were in their majority confirmed, providing evidence for EWW's scale criterion-related validity.

#### **7.6.7. The relationship between the E-Work Well-being (EWW) and E-Work Life (EWL) scale.**

At the onset of this PhD research it was assumed that that the newly devised EWW would not only correlate with the EWL scale, but would also complement its scope of application, by expanding on remote e-workers' well-being. All the relationships discussed above, along with the full correlation matrix presented in Table 7.12., clearly indicated that the two scales are related, but still not completely overlapping. Particularly, the correlations between the EWW and the EWL dimensions were, in their majority, statistically significant. To confirm that the EWW scale has a unique and differentiating role to play when examining the remote e-working experience as illustrated in Table 7.12. the EWW scale has in some cases stronger correlations with established measures examining well-being than the EWL scale. For instance, positive mental health and sleep are related much more strongly with the EWW scale (and especially with some of its sub-dimensions) than the EWL scale. This could be due to the focus and number of items in EWW exploring these issues as compared to the EWL. An additional interesting example is fatigue (both emotional and psychosomatic) as examined by the EWW scale which indicates some of the highest correlations (refer to the relationship between emotional exhaustion and technostress; and psychosomatic fatigue with detachment and sleep). Hence, this study proposed that that using both scales together makes theoretical sense, as the two scales are complementary to each other, allowing to better explore a more holistic view of the remote e-working experience.

#### **7.7. Discussion**

The current main study provided a conceptual replication of analyses conducted by Van Horn et al. (2004) examining a five-dimensional structure of well-being at work, tailored to a remote e-working population. It was, in particular, explored whether work-related

well-being manifests itself in five distinct components (i.e., affective, cognitive, social, professional, and psychosomatic). Confirmatory Factor Analysis (CFA) provided additional validation to the newly devised E-Work Well-being (EWW) scale, following the Exploratory Factor Analysis (EFA) performed in Chapter 6. Finally, the current study also provided further validation (i.e., CFA analyses) to the E-Work Life (EWL) scale as developed by Grant et al. (2019).

#### **7.7.1. Factorial structure, construct and criterion-related validity, and reliability of the EWW scale**

To start with the factorial structure of the EWW scale, this study indicated that after dropping two items belonging to the *Emotions* sub-dimension (i.e., '*lonely*' and '*proud*') the remaining 69 items satisfactorily loaded onto the 13 constructs of well-being at work. These first-order factors were: emotions, job satisfaction, organisational commitment, emotional exhaustion, cognitive weariness, relationships with colleagues, relationship with supervisor, social isolation, autonomy, competence, career development, musculoskeletal symptoms and fatigue symptoms. All items loaded substantially, and thus confirmed, the adequacy of their respective factors (see Appendix Y). As illustrated in Appendix Y, these 13 constructs satisfactorily loaded to five second-order factors: affective, cognitive, social, professional, and psychosomatic well-being, which correlated freely. In contrast to Van Horn et al.'s (2004) results, the analyses failed to confirm that well-being can be an overarching third-order factor to which the five aforementioned components of well-being load. In other words, the findings did not correspond with the notion of work-related well-being as a concept that manifests itself in five facets. However, concurrent with Van Horn et al.'s (2004) results, the main study found that a five-factor oblique model to well-being at work fitted the data well. This suggests that the concept of well-being is comprehended considering five empirically related dimensions.

Interestingly though, results proposed some high correlations between dimensions the emotional and cognitive dimensions as well as the professional and social dimensions; which could not be dismissed. Therefore, Van Horn et al.'s (2004) five-dimensional model was reframed, proposing a more parsimonious model. Specifically, a three-factor oblique model was revealed identifying the *Individual factors* (including emotional and cognitive well-being dimensions), the *Interaction between the individual and the organisation* (including social and professional well-being dimensions) and the *Health dimension* (including the psychosomatic well-being dimension). Once these adjustments were made, it was also noticed that the organisational commitment construct better loaded to the *interaction between the individual and the organisation* factor, rather than the emotional well-being dimension. Making this final amendment, led to an exceptionally good fit of the model.

In order to choose whether a five-factor oblique, or a three-factor oblique model provides the greater understanding and interpretation of well-being at work, both fit indices and existing psychological theory should be considered (Murray & Johnson, 2013). Bentler and Mooijaart (1989) suggested that, from a statistical point of view, when choosing between complex and more parsimonious models, parsimonious models should be preferred as they can provide greater precision of estimation. This, of course, requires that the parsimonious model also makes conceptual sense. Adopting a more parsimonious model to well-being at work can, thus, be good in terms of simplicity (Bentler and Mooijaart, 1989) and also allow to reduce the EWW scale items, making it more practical.

Based on how the dimensions have been defined within Van Horn et al.'s (2004) well-being model, the factors share some common theoretical grounds. In regards to Van Horn et al.'s (2004) conceptualisation, job satisfaction possesses affective components (Costa & McCrae, 1980). Nevertheless, a good amount of research has suggested that job

satisfaction has also some cognitive components, as individuals, regardless of their job complexity, tend to be satisfied with their jobs based on how positively they interpret and evaluate their job characteristics (Judge, Bono, & Locke, 2000). Lent (2004) in their work not only claimed that job satisfaction is both an affective and cognitive outcome but also highlighted the difficulty of bypassing the cognitive appraisals and filters when evaluating individuals' overall affective experience. Simultaneously, the cognitive dimension, as it has been theorised in Van Horn et al.'s (2004) model, captured the weariness that individuals experience, which can result in a decrease of concentration and taking in new information levels. This weariness can be highly and semantically related to the emotional exhaustion that individuals experience. Hence, merging the affective with the cognitive factor does make theoretical sense.

Along the same lines, the second factor in the three-factors oblique model, suggests the grouping of social and professional elements. This again makes semantic sense as the social and professional dimensions can provide an overall picture of the relationship between individuals and their organisation, by considering relationships with colleagues and supervisors, and the autonomy, career opportunities, and competence individuals experienced in their roles.

There is also a justification as to why disentangling the organisational commitment from the affective well-being dimension may make conceptual sense. Particularly, Van Horn et al.'s (2004) findings indicated that the concept of organisational commitment was part of the affective component of well-being. Their theoretical justification was in line with previous research suggesting that a multi-dimensional approach to affective well-being can capture any complexities and changes in individuals' working lives (Briner, 1999); highlighting the benefits of measuring affect as particularly experienced in the work domain (Warr, 1990). Nevertheless, the results of the current

study challenge this way of conceptualising organisational commitment, highlighting its potential belongingness to the *Interaction between the individual and the organisation* dimension. This is aligned to previous research which suggested that the positive interactions between colleagues substantially contributed to the variance in organisational commitment levels (Leiter & Maslach, 1988). Referring back to the widely known and used typology of organisational commitment suggested by Allen and Meyer (1991), commitment both possess an affective component which shows the emotional attachment to an organisation, and reflects perceptions about the cost of leaving the organisation (continuance) and the obligation to remain within the organisation (normative). Especially, in accordance, with the normative aspect of commitment, it is likely that the employee may internalise his/her organisation's values and goals (Muthuveloo & Rose, 2005). This organisational aspect of commitment justifies the best fit of the construct under the *interaction between the individual and the organisation* factor.

Overall, the three-factor oblique model which proposes reframing Van Horn et al.'s (2004) five-dimensional model would seem preferable. These three revealed dimensions reflect the broader and well-used definition of health provided by the World Health Organisation (WHO), according to which "*health is a state of complete physical, mental, and social well-being*" (Callahan, 1973, p. 77). In line with this definition, researchers who presented quality of life as an indicator of well-being, suggested that the main aspects that are encompassed in this term are: the physical, the social, and the emotional functioning (Gladis et al., 1999, Katschnig 1997). In other words, the three proposed dimensions have been discussed and supported in previous research which attempted to conceptualise well-being at work. Along the same lines, a well-known definition provided by Dodge, Daly, Huyton, and Sanders (2012) expanded upon the importance of having an equilibrium between resources and challenges that individuals

had to face, in order for individuals to experience stable well-being. Both resources and challenges concerned psychological, social, and physical aspects.

Notwithstanding the more parsimonious conceptualisation of well-being at work, it is still proposed that a multi-dimensional approach to measuring well-being within remote e-working populations is highly relevant and appropriate. The multi-dimensional nature of well-being at work allows us to consider the links between well-being and other related concepts, something which is not feasible when using affect-focused approaches. This can, in turn provide a greater insight into the nature, antecedents, and consequences of well-being, in a remote e-working setting. Consequently, highly relevant and good quality workplace interventions can be informed and implemented.

The present study has also examined EWW scale's construct and criterion-related validity. More explicitly, correlations between the EWW scale sub-dimensions and related validated scales, such as positive mental health, detachment from work, organisational trust, and manager support for remote e-working, were supported. Simultaneously, EWW scale's sub-dimensions predicted, and were predicted by validates instruments measuring flexibility, work-life interference, job effectiveness, sleep problems, technostress, general self-efficacy and ergonomics. Hence, these findings supports scale's construct and criterion-related validity. Additionally, scale reliability was evidenced using Factor Determinacies to examine inter-item correlations. The reliabilities of the 13 constructs fell in the excellent range, ranging from .90 to .97 (Nunnally and Bernstein, 1994).

#### **7.7.2. E-Work Life (EWL) scale**

The current chapter also revised the published version of the EWL scale (Grant et al. 2019). Following, the recruited sample of the 399 remote e-workers allowed replication of previous results found in earlier validation studies (Grant et al. 2019), and further

confirmed and validated the structure and efficacy of the EWL scale. In particular, the published version of the scale increased from 17 to 22 items. Psychometric properties of the 22-items version of the scale were further examined by performing Confirmatory Factor Analysis. Findings provided support for a 20-item version of the measure including confirmation of the four factors named Organisational Trust (5 items), work-related Flexibility (4 items), Effectiveness/Productivity (5 items), and Work-Life Interference (6 items). As further discussed below, the importance of this scale lays in the fact that it allows assessing four theoretically relevant areas of the remote e-working experience, considering previous literature and findings within remote e-working populations (Grant et al. 2011; Grant et al. 2013).

It has been extensively supported by research that organisational trust is a fundamental aspect in the success of remote e-working (Pyöriä, 2011), with individuals seeking their employers' confirmation in order to be more confident to perform their work tasks (Charalampous et al. 2018). Echoing these results, interviewees conducted during this PhD research (see Chapter 4) proposed that individuals especially appreciated their managers and colleagues' trust when e-working remotely, whereas micromanagement could have the reversed results. Taking into consideration that '*visibility*' and '*presence*' of employees are lessened, employers and especially managers are called to change the way they manage people by using output-related metrics and trust when evaluating individuals' performance (Felstead, Jewson, & Walters, 2002).

In addition, a vast amount of literature has supported that flexibility over the time and location of individuals' work can increase job satisfaction (e.g., Caillier 2012, Chesley, 2010; Messenger & Gschwind, 2016). This was indeed supported by interviewees' narratives in this thesis (see Chapter 4), who even claimed that they were



reluctant to choose moving to a different organisation, who would not grant them with this flexibility.

Furthermore, numerous studies have proposed that being able to e-work remotely can be positively associated with performance (e.g., Gajendran, Harrison, & Delaney-Klinger, 2015, Kossek et al., 2006) with one reason being that individuals tend to work longer, especially the days they work from home (Kelliher & Anderson, 2010). Filtering interruptions and not being part of the office politics also gave individuals the opportunity to focus more on their work tasks (Fonner & Roloff, 2010). Nevertheless, as Boell et al. (2016) highlighted the degree to which remote e-working is effective inextricably linked to the nature of the work task. For instance, even though remote e-working seems to be more appropriate for activities that require concentration, such as writing, it may be less desirable for teamwork and creative tasks. Boell et al. (2016) also suggested that the degree to which individuals rely on their colleagues to complete a task can also influence how much they will benefit from remote e-working.

Qualitative narratives in Jeffrey Hill, Ferris, and Martinson's study (2012) expanded on how the time saved from commuting can be used for work, family, and personal matters and commitments, which can in turn reduce work-life conflict. Being able to flex the completion of job tasks allowed in many cases employees to spend more time with their families, continuing work later on in the evening times (Haddock et al. 2006). In contrast, what was found to threaten work-life balance, is the increased permeability of boundaries between work and personal life (Standen, Daniels, & Lamond, 1999). A very interesting finding from Allen et al.'s (2013) meta-analysis was that it is more likely that individuals experience work-life conflict, instead of life-work conflict, when e-working remotely. The modern 'always-on' culture, where individuals need to be contactable 24/7, beyond typical working hours (Derks et al., 2015) can definitely play a

role to this conflict. In order to avoid the blurring of boundaries, and consequently the conflict that comes with it, employees were often led to the decision to use designated spaces to conduct their work, as this made it easier for them to disengage from work (Basile & Beauregard, 2016).

Hence, it can be supported that the EWL scale allows us to explore the interplay between these relevant concepts which can, in turn, inform and guide the management and the development of strategies to support individuals' remote e-working experience. Findings from the main study that were based on a good number of validated measures examined provide strong evidence about the relationship between the EWW and EWL scales, simultaneously indicating their distinctiveness. This recommends that using the two scales alongside each other, we could get a more holistic understanding of the remote e-working experience.

### **7.7.3. Practical applications**

The present study has achieved to both to further validate the newly devised E-Work Well-being (EWW) scale, but to also further develop and validate the E-Work-life (EWL) scale, a potential sister scale to be used with the EWW scale. Both scales can be specifically utilised to examine remote e-workers' well-being (respectively) and their overall remote e-working experience. Using these scales in a remote e-working setting can urge the discussion about working practices involved in remote e-working, informing potentially helpful interventions for individuals, supervisors, and organisations.

### **7.7.4. Future research**

Future research is needed to replicate the novel multidimensional, EWW measure in a greater variety of contexts, across broader occupations and cultures. In particular, further research should also aim to cross-nationally validate the EWW scale in more diverse national samples. This can be fundamental given the differing norms, policies, and

perceptions that different countries and cultures may have towards the remote e-working arrangement. Thus, the EWW scale could be used on its own when focusing on well-being issues. The EWL scale could be used alongside EWW scale to measure the holistic remote e-worker experience. Further research could also investigate a broader range of outcomes of the EWW scale (e.g., remote e-worker individual and team performance, and engagement) and predictors (e.g., task interdependence, psychological contract, individual differences) that help us understand what are the specific characteristics that can lead us to the success of this working arrangement. Furthermore, given that these analyses failed to confirm well-being as an overarching (third-order factor), while introduced a new three-factor model instead, a further investigation to well-being's structure would be desired, empirically testing this model in bigger samples. Thus, it is recommended that further research could also identify supplementary subordinate sub-dimensions that allow us to interpret well-being in more accurate ways. Finally, further research should focus on developing targeted interventions that are based on each EWW construct of the *Individual factors* (including the affective and cognitive elements), the *Interaction between the individual and their organisation* (including the social and professional elements) and the *Health* factor. Understanding the interwind between these dimensions will allow improving remote e-workers' experience and tackle any issues relating to isolation, fear of being forgotten when it comes to training and career opportunities, tackling any exacerbation of the psychosomatic conditions, which seem to be the greatest downsides of this way of working.

#### **7.7.5. Limitations**

It is acknowledged that this was a relatively long survey to complete which may have contributed to participant fatigue. However, the study provided a sufficient content coverage of well-being as a whole, as well and its related constructs. In addition, the

study had a cross-sectional design which does not allow us to reveal causal relationships between the examined variables. Therefore, a longitudinal design needs to be implemented in future studies. Additionally, the scale development process is not finalised in this study. As a next step, associated norms need to be developed in order to confirm the scale. In order to provide normative meaning into the scale, relevant supplementary data are used alongside the interpretation of the scale, providing explanatory context (Angoff, 1996). Typically, norms show an individual's relative standing within different samples (Ward, & Murray-Ward, 1996). This is represented in a percentile rank distribution (comparing between characteristics such as gender, age, cultural background). This was beyond the scope of this PhD research since developing norms may take a couple of years during which data from a variety of samples is collected.

#### **7.7.6. Conclusion**

The online study conducted and presented in this main study has provided a mechanism to test the newly devised EWW scale, and to provide further validation of the EWL scale. Both scales showed a sound factor structure, with items loading satisfactorily to their latent variables hypothesised. While examining for EWW scale's validity, some meaningful relationships were also identified, indicating associations between remote e-working and individuals' well-being (including positive mental health, and sleep). working outputs (e.g., techno-stress). Previous research presents a gap in better understanding remote e-workers' cognitive weariness levels, and psychosomatic health, something which is addressed in the present research. The findings indicated that ergonomics and techno-stress can play a crucial role, when e-working remotely.

## **Chapter 8: General Discussion and Conclusions**

### **8.1. Overview**

This chapter provides a general discussion and conclusions reached by the whole PhD research. The development and the final version of the E Work Well-being (EWW) scale is presented, as well as an alternative interpretation of the structure of well-being at work. Information gathered from all the conducted studies is collated and presented to show how this research uniquely contributes to our theoretical understanding of remote e-working and its impact on well-being at work. Further validation checks to the E-Work Life (EWL) scale were also carried out and it is discussed why using the two scales can make conceptual sense. Limitations of this research, along with future directions are also acknowledged and discussed. Finally, the research suggests practical applications, drawn upon the findings of this thesis, which can benefit organisations, employers, and individuals when managing better the remote e-working experience.

### **8.2. The importance of looking into the phenomenon of remote e-working and well-being at work and the overall aims of the present research**

The modern workplace has seen a growing interest from employees to achieve more flexible working practices and work at any time and any given location, by making use of technology to stay connected to their workplace (Maitland & Thomson, 2014). Legislative support has been provided and, thus, supporting these ways of working in many different countries around the globe (Kelliher & de Menezes, 2019; Stiles, 2020). For instance, in 1996 U.K. parents were given the right to request flexibility from their organisations in order to care for dependants, and since June 2014 they have been, by law, able to request flexible hours (Pyper, 2018). Hence, employment has moved away from a reality where individuals are restricted to work from a traditional working environment, as they can now work much more flexibly. This, in turn, allows them to better respond to

the demands of their work and personal lives (Kelliher, 2013). Systematically reviewing existing findings has shown that remote e-working can have an impact on individuals' well-being at work, which has a multi-dimensional nature (Charalampous et al., 2018).

As mentioned in the Introduction (Chapter 1), the timeliness and popularity of remote e-working has substantially increased towards the end of this PhD research, due to coronavirus (COVID-19) outbreak. Following the World Health Organisation announcing coronavirus as a pandemic on 12 March, 2020, many individuals around the world were asked to work remotely (where they could) from home (Ryder, 2020). This introduced many individuals (and organisations) to a new way of working that they may not have previously experienced. Not all organisations would be prepared for this significant change the social, cultural, and technological obstacles have been many to align a workforce to this type of working. Many discussions were thus raised about how individuals could smoothly adjust to working from home, look after their mental and physical health, staying effectively connected to their colleagues and organisations (ACAS, 2020). Although this research has not directly focused on working remotely during the pandemic, it can still inform best practice when adopting this working arrangement, many of the key findings will assist individuals, supervisor and organisations to provide effective guidance at this unprecedented time.

The present research had the overall aims:

- To develop a new scale (i.e., E-Work Well-being scale) to measure well-being within a remote e-working population. Following all the scale development steps suggested by Classical Test Theory (CTT; as outlined by DeVellis, 2016), and proving the scale's validity and reliability.

- To assess and encapsulate the most appropriate and theoretically robust framework to support the concept of well-being at work within a remote e-working population; by expanding on Van Horn et al.'s (2004) five-dimensional model.
- To provide a holistic understanding of remote e-workers' well-being at work, exploring the most important and relevant dimensions, and simultaneously unravelling underlined mechanisms which can play a role. This will allow a greater insight to be gained into current paradoxical findings, responding to whether remote e-working can benefit or harm individuals' well-being at work.
- To provide further validation of the E-Work Life (EWL) scale (Grant et al., 2011), as this is a relevant scale to be used alongside the E-Work Well-being scale to gain a greater understanding of the over-arching remote e-working experience.

The section below expands on how the findings from all the conducted studies contribute to the fulfilment of each aim set by the PhD research. In particular, conclusions are drawn considering the key findings from the systematic review presented in Chapter 2, the semi-structured interviews presented in Chapter 4, the cross-sectional pilot study presented in Chapter 6, and the cross-sectional main study presented in Chapter 7.

### **8.3. Summary of findings**

#### **8.3.1. The E-Work Well-being (EWW) scale development**

As mentioned above the first and overarching aim set of this research was to develop the newly devised E-Work Well-being (EWW) scale; which would enable assessing well-being within a remote e-working population. Scale development steps proposed by CTT were followed (DeVellis, 2016), and scale's validity and reliability were supported.

Chapter 1 clearly identified the timely need to develop measures which are tailored to the remote e-working experience. A good example is the E-Work Life (EWL) scale as it has developed by Grant et al. (2011; 2019) which assesses *Work-Life*

*Interference, Productivity/Job effectiveness, Flexibility and Organisational Trust* within remote e-workers. As previously discussed, Grant et al. (2019) have suggested that there is still a need to develop a scale which specifically assess the impact of remote e-working on well-being at work. Since newly devised measures need to have a well-grounded and sound theoretical basis, the Van Horn et al.'s (2004) work-related well-being model was chosen as relevant when developing the EWW scale. Van Horn et al. (2004) suggested that well-being manifests itself in five distinct dimensions, namely affective, cognitive, social, professional, and psychosomatic (see Figure 1.1. for the model and its sub-dimensions). Consequently, the systematic review presented in Chapter 2 used Van Horn et al.'s (2004) model, as a theoretical framework, to synthesise and present existing literature on remote e-working and its impact on well-being at work. Findings from the review and the greater scope provided into the topic, when considering how well-being dimensions were intertwining, supported that a multi-dimensional and domain-specific approach to well-being can indeed be a meaningful approach to use.

The semi-structured interviews conducted in Chapter 4 indicated the importance and relevance of all five well-being dimensions (and sub-dimensions), which established that the EWW scale would benefit from including all of five dimensions proposed by Van Horn's et al. (2004). As a next step in the scale development process, 150 items were developed based on the qualitative findings in Chapter 4 and a review of validated measures. Face and content validity checks of the newly devised scale took place within the PhD research team. This review process led to 109 items which were subsequently sent to three experts for external review (Chapter 5). Experts' input indeed brought a great insight into the scale development, identifying problematic items and inconsistent definition of constructs process (DeVellis, 2016). This process resulted in a 74-item version of the EWW scale which was then assessed in the pilot study.



Next, the pilot study used a cross-sectional design to examine the factor loadings and structure of the 74-item EWW scale. Exploratory Factor Analysis (EFA) was performed on data from 202 U.K. remote e-workers. Findings indicated that, except from the constructs of *cognitive weariness* and *career development*, the rest of the well-being constructs had their theoretically proposed items loading satisfactorily to them. The model fit for the rest of the constructs was adequate. Exceptions were: the emotions dimension, where a 3-factor solution was proposed, which did not make semantic sense; and the psychosomatic dimension which loaded to its musculoskeletal and fatigue symptoms, instead to a single factor solution. Exploratory Structural Equation Modeling (ESEM) was also performed to explore EWW scale's overall factor structure (assuming that the 13 constructs of well-being correlated freely). ESEM again proposed that *cognitive weariness* and *career development* dimensions were problematic. Once excluded these two constructs, and some poorly performing items, the ESEM results proposed a 9-factor structure, including 58 items. The factor solution was not majorly different from the initially theorised one. However, the PhD researcher used the initially theorised constructs/dimensions to check EWW scale's construct and predictive validity. From the validation process, the constructs of *cognitive weariness* and *career development* were excluded, as well as were poorly performed items.

Following, the cross-sectional main study recruited 399 remote e-workers allowed to run CFA on an updated 71-item version of the EWW scale (Chapter 7). Three alternative factor structures consistent with Van Horn et al. (2004) were checked and support was found for a five-factor oblique model, where the five factors of affective, cognitive, social, professional, and psychosomatic well-being correlated freely. Analysis suggested the deletion of two poorly performing items (Emotions: *Feeling proud* and

*feeling lonely*), which led to a final 69-item version of the scale, which adequately fitted the data. Factor Determinacies for all constructs were good.

Notwithstanding the five dimensional oblique solution showing adequate fit (which is in line with Van Horn et al.'s 2004 conceptualisation), further exploration of the data suggested a more parsimonious three-factor solution fitted the data best. According to this three-dimensional conceptualisation, well-being manifested itself firstly, in the *Individual factors* which included the aspects of emotions, job satisfaction, emotional exhaustion, and cognitive weariness. The second factor concerned the *Interaction between remote e-workers and their organisation* and included the social dimension, and precisely, relationships with colleagues and supervisor, social isolation, the professional dimension, and precisely, autonomy, competence and career development, as well as the aspect of organisational commitment. The third dimension comprised *Health*, including the musculoskeletal and fatigue symptoms (see Figure 7.3.).

As thoroughly discussed in Chapter 7, the three-dimensional model makes theoretical and conceptual sense. Combining the affective components of emotions, job satisfaction, and emotional exhaustion with the component of cognitive weariness, can be justified by the inextricable link between the cognitive appraisals when evaluating individuals' overall affective experience (Lent, 2004). In addition, the cognitive weariness that individuals experience can resemble their emotional weariness too. There is also a conceptual sense when unifying the social and professional well-being components under the *Interaction between remote e-workers and their organisation* dimension, as this newly proposed dimension captures individuals' overall organisational experience. Adding to that, separating the construct of organisation commitment from the affective dimension, and incorporating it to the newly proposed *Interaction between remote e-workers and their organisation* dimension instead, can be explained by the

proposition that employees may internalise their organisation's values and goals (Muthuveloo & Rose, 2005). The more parsimonious nature of this model can also be good in terms of simplicity (Bentler & Mooijart, 1989; Tabachnick & Fidell, 2007), making it more practical when used within organisations.

This alternative conceptualisation of well-being at work, and the reframed unification of the constructs is further discussed in the section below. Correlations and regressions between the EWW constructs (considering the three proposed dimensions) and existing validated measures confirmed scale's construct and predictive validity. Overall the results suggested that the EWW scale is a valid and reliable instrument that measures the relevant dimensions of remote e-workers' well-being at work.

### **8.3.2. A holistic understanding of remote e-workers' well-being: Drawing upon a three-dimensional conceptualisation of well-being at work.**

As per the third aim of this research, a holistic understanding of remote e-workers' well-being at work was provided, exploring the most important and relevant well-being dimensions. Simultaneously, unravelling underlined mechanisms can also contribute to a greater understanding of this relationship. Beyond the development of the EWW scale, which was the principal aim of this research, the conducted studies allowed for a greater exploration of relevant well-being dimensions and the impact of remote e-working has on them. The section below presents all the well-being constructs examined throughout this research, unifying them under the final three-dimensional well-being model proposed in Chapter 7. Explicit reference to the results of all conducted studies is made to not only discuss how this research advances our knowledge on the topic, but also to show the specific components of well-being that can be investigated when using the EWW scale.

#### ***8.3.2.1. Individual factors of well-being: Including emotions, emotional exhaustion, job satisfaction, and cognitive weariness.***

As proposed by the systematic review (Charalampous et al. 2018), researchers have shown a considerable amount of interest about emotions, job satisfaction, and emotional exhaustion, which is the opposite for the case of cognitive weariness levels. To start with emotions, the systematic review findings suggested that there is an overall positive impact on individuals' emotions, especially the days individuals worked from home (e.g., Anderson et al., 2015). This was indicated by the qualitative findings presented in Chapter 4, as interviewees mentioned a greater range of positive emotions experienced the days they e-worked remotely. In line with Sardeshmukh et al. (2012), both systematic review and qualitative findings supported that remote e-workers experienced less emotional exhaustion, especially when individuals could exert their flexibility to reduce role conflict and better manage work pressures. According to interviewees' narratives, social support contributed significantly to individuals' emotional exhaustion feelings, since when this was absent, individuals were not able to talk about distressing matters and offload. In addition, job satisfaction was supported, by both the systematic review findings and interviewees' claims to increase especially when individuals had greater flexibility over the time and location of their work (Messenger & Gschwind, 2016), balancing their personal and working lives (Ter Hoeven & Van Zooner, 2015), and avoiding stress linked to commuting (Felstead & Henseke, 2017; Kluger, 1998). As explored in the pilot and main study, the more positive emotions, the greater levels of job satisfaction, and less emotional exhaustion remote e-workers experienced, the greater levels of positive mental health, the more able individuals were to detach from work, experiencing less psychological distress.

The systematic review findings proposed a gap in our knowledge concerning the degree to which individuals become cognitively weary, as a result of their remote e-working arrangements (Charalampous et al. 2018). The qualitative findings shed some more light into that, supporting that individuals can indeed take new information in and concentrate more easily when they are away from their office premises (Vittersø et al. 2003). There were some contributing factors that are worth acknowledging though. For instance, the nature of the work task was proposed to be important, with individuals choosing to do ‘the right thing at the right place’ (e.g., tasks demanding team interaction may be best undertaken in an office environment). According to the interviewees, although individuals had to deal less with social distractions, it was of crucial importance to occasionally block e-distractions caused by constant accessibility to work. By doing so, cognitive weariness levels could decrease and individuals could concentrate better. Also, remote e-workers who made use of the flexibility available and had breaks were the ones that they were benefited the most from the remote e-working arrangement, experiencing the less cognitive weariness. Findings from the main study also supported that the more likely individuals were to detach from their work, and the more positive mental health they claimed, the less cognitive weariness levels they reported. Whereas, technostress (and precisely technology overload and complexity) could predict individuals’ cognitive weariness.

Overall, it can be concluded that the individual factors seems to be benefited by the remote e-working arrangement. However, important contributing factors to this beneficial role should not be ignored, such as having social support, and being able to disconnect when individuals need to focus.

### ***8.3.2.2. Interaction between the individual and the organisation: Including social relationships with colleagues and supervisors, social isolation, autonomy, competence, career development, and organisational commitment***

Considering the interaction between the individual and the organisation, there was a blurred picture as to whether remote e-working is beneficial, with remote e-working needing to be the 'right blend' (e.g., in regards to time spent e-working remotely). Similarly to previous research (e.g., Bailey & Kurland, 2002; Sewell & Taskin, 2015) qualitative data from this thesis suggested that social isolation was looming large, with individuals occasionally feeling invisible to line managers and colleagues. Interestingly though, interviewees in Chapter 4 claimed that they were still happy with their relationships when e-working remotely, which was also supported in a meta-analysis conducted by Gajendran and Harisson (2007). Individuals noted some actions they took, which probably contributed to this satisfaction. In particular, systematic review findings revealed that individuals could take proactive steps when establishing their relationships and reaching colleagues to ameliorate social isolation feelings (Lal & Dwivedi, 2009). Along the same lines, qualitative findings in Chapter 4, indicated that individuals may make a conscious effort to create visibility in order to counterbalance the lack of physical presence; something that has been previously supported (Richardson & Kelliher, 2015). Interviewees proposed that 'making themselves seen' not only allowed them to feel more connected to their workplace, but could also benefit their career development and how many opportunities they would receive.

It is worth noting, that interviewees highlighted managers' role to good relationship building and career opportunities perceptions. It was, in particular, suggested that managers needed to be approachable, to set clear expectations, and made contact which goes beyond work-related matters. Getting to know individuals personally was

noted to be even more critical in a remote e-working setting as visual cues about individual struggling were lost. Additionally, a supportive and inclusive organisation, such as the one examined in Chapter 4, can contribute to individuals feelings of being accounted and valued. Furthermore, synthesising well-being dimensions highlighted the increased importance of social support and good working relationships in a remote e-working setting, which can eliminate the danger of individuals becoming withdrawn (Charalampous et al. 2018). The more organisational support, and precisely support for remote e-working was offered the greater job satisfaction, less psychological strain and more committed they were to their organisation; something discussed within existing literature (Bentley et al. 2016, Fay & Kline, 2011, 2012; Tietze & Nadin, 2011).

From the systematic review, it was also apparent that remote e-workers possessed more autonomy due to this way of working (e.g., Gajendran & Harrison, 2007; Gajendran, et al. 2014). Interview findings further supported that autonomy increased, but this was even more prominent within individuals who held higher position within the organisation, as they were more comfortable flexing their time and change the scheduling of their work. It is also worth considering that some job roles demanded individuals to be present at more fixed working hours, or some individuals chose replicating a 9 to 5 routine. Combining the systematic review results and the qualitative findings, it can be supported that autonomy is the most benefited aspects of individuals' interaction with their organisation when e-working remotely.

The systematic review outlined a gap in our knowledge concerning the competent remote e-worker and what does this involve. The interviews shed some light into that, proposing that an effective remote e-worker should be self-disciplined, focused, and self-motivated as office cues are not present anymore. Good communication skills, especially when using electronic means were suggested to be key, as it was very important to get

messages across. Also, choosing to use the right electronic medium was proposed to be very important, as individuals hugely relied on emails.

#### ***8.3.2.3. Health: including musculoskeletal and fatigue symptoms***

As suggested by both by the systematic review of existing literature (Charalampous et al. 2018) and a recent review by Eurofound and the ILO (2017), research seems to have overlooked the impact that remote e-working has on individuals psychosomatic health. The present thesis filled this gap, by exploring psychosomatic health qualitatively in 40 interviewees, and quantitatively in two samples of 202 and 399 respectively. Although not major psychosomatic symptoms were identified, in none of the studies conducted, both interviewees' narratives and quantitative results raised some risks linked to the remote e-working arrangement (such as remote workstation ergonomics, lack of breaks and sedentary behaviours) which are further discussed below in sections 8.3.3.1. and 8.3.3.2. below).

#### **8.3.3. Exploring underlying mechanisms and contributing factors to the relationship between remote e-working and well-being at work.**

Underlying mechanisms and contributing factors can enrich our understanding of how remote e-working can have an impact on individuals' well-being; and are consequently discussed below. It is proposed that since these factors seem to be highly relevant, they could be investigated alongside the EWW scale to provide a wider understanding of remote e-workers' well-being.

##### ***8.3.3.1. Ergonomics***

The present research also attempted to fill the gap that scarce research has left us with, around remote workspace's ergonomics and their impact on individuals' psychosomatic conditions, as identified by the systematic review (Charalampous et al., 2018). Qualitative narratives in Chapter 4 revealed that having an ergonomically sound work station can be



critical to remote e-workers' psychosomatic health, as it could lead to back and neck aches. It was also intriguing to observe that not all remote e-workers got their remote workspaces assessed, neither they had received advice on that. In further support of these findings, both the pilot and main study suggested that ergonomics contributed significantly to musculoskeletal symptoms, and the main study suggested that ergonomics also accounted for psychosomatic fatigue. This denotes the importance for organisations to pay greater attention to health and risks associated with individuals' workspaces, as this is inextricably associated with psychosomatic symptoms (Dennerlein & Johnson, 2006; Ellison, 2012; Garza et al. 2012). Ergonomically sound working spaces and guidelines to work in a safe manner are, thus, essential to ensure individuals are exposed to less risk to experience physical complaints and irritations (Garza et al., 2012). Hence, ergonomics metrics could better explain scores provided by the *Health* factor assessed in the EWW scale.

#### **8.3.3.2. *Health-related behaviours***

The systematic review suggested that there is also scarce evidence within the remote e-working literature concerning health-related behaviours (such as eating and exercise habits). However, these behaviours should not be dismissed as they can have an impact on psychosomatic health (Allen et al., 2015). Healy et al. (2012) suggested that the more time individuals tend to sit, the less they exercise, and the more their diet deteriorates the more their health will decline. The qualitative findings presented in Chapter 4 shed some light to that, suggesting that remote e-working can actually be an enabler to a more healthier lifestyle as individuals have the flexibility to fit more exercise in and make better choices in their food. Notwithstanding these findings, individuals expanded on how breaks could be at risk as individuals may miss social cues, get very absorbed with work leading to staying for longer in front of their screens. It is stressed how important it is for

individuals to make a deliberate effort to have a break, even using reminders to help them. Similarly to ergonomics, better understanding of health-related behaviours can provide greater insight into the *Health* factor assessed in the EWW scale.

#### **8.3.3.3. *Switching – off from work***

The systematic review findings thoroughly discussed why switching-off can be a particular issue within remote e-working populations, taking into consideration the embedded use of technology (Middleton, 2007), and the expectation to be constantly accessible (Derks et al., 2015). Qualitative findings in Chapter 4, in agreement with literature, highlighted the importance of detaching from work as this could be an indicator of individuals' recovery from work (Crompton & Zijlstra, 2011). Interestingly though, the impact of remote e-working on switching-off from work was blurred. Although for some individuals it was easier to switch-off and detach as they could immediately switch to their personal lives, some others found it harder. One of the main factors that could cause this was individuals' personality, something that puts the responsibility of switching-off on the individual. From a different perspective though, constant access played a role, as well as role models did (e.g., managers emailing outside working hours). Individuals who were new to the remote e-working arrangement could also find it even more challenging. These findings, not only highlight that 'one size does not fit all', but they also highlight that organisations and managers' contribution should not be disregarded. The importance of looking into these issues is enhanced by previous research suggesting that switching-off from work can lead to poorer well-being and health problems (Kompier et al., 2012). Thus, examining switching-off and detachment from work can be pivotal when investigating remote e-workers' well-being, as it can especially link to the *Individual factors* (i.e., emotions, job satisfaction, emotional exhaustion, and cognitive weariness) examined by the EWW scale.

#### **8.3.3.4. *Individual differences***

Although not intentionally explored, findings collated from the qualitative study (Chapter 4) identified some individual differences that seem to be important. For example, individuals who were more self-driven, were more likely to claim that they took advantage of the flexibility provided by remote e-working and adopted a more healthier lifestyle. Also, introverted individuals seemed to enjoy more working in solitude, away from the socialness of the office. Whereas more sociable individuals were the ones who proposed that they would be more proactive in establishing and maintaining relationships with colleagues and supervisors. They would also make more conscious efforts when communicating their work outcomes. The degree to which individuals switched-off from work was also mentioned to link to their personality type. These findings again recommend that ‘one size does not fit all’ suggesting that paying attention to these working preferences and personality types can allow us to anticipate who will benefit the most remote e-working. As the systematic review suggested, researchers have not considered individual differences and personality traits when examining remote e-working’s effectiveness satisfactorily. Although limited, previous evidence has shown that remote e-workers may enjoy their remote e-working more, based on their personality type. For instance, being more open to experience, ruminating less, and having more social connections outside their workplace were all attributes that could lead to experiencing positive emotions the days individuals worked from home (Anderson et al. 2015). Also, workaholic individuals were found to be more satisfied with their job when e-working remotely (Virick et al., 2010).

#### **8.3.3.5. *Technology use and its impact***

Notwithstanding ICT use being an integral part of working away from the main office (Leonardi et al., 2010) and potentially harm individuals well-being, the systematic review

suggested that researchers need to delve deeper into this topic (Charalampous et al. 2018). The qualitative findings supported that although individuals considered technological means as great tools and key enablers when staying in touch with their workplace, they expressed the desire to have, at least, some form of interaction which is not electronic. This finding further supports the notion that no other form of interaction can fully replace face-to-face interaction (Keller & Fay, 2012). Interviews conducted in the present thesis suggested that regardless of technology transforming the way organisations work, face to face interaction should still be embedded (if feasible) to individuals' working lives. This suggestion reflects proposition made by Corbin (2017), in a Gallup report, that individuals are more engaged when they split their time between working in an office and a remote location. It was precisely suggested that optimal levels of engagement can be reached when individuals spend between 60% - 80% of their time working off-site, but still meeting their co-workers.

This thesis also adds to our knowledge about the relationship between remote e-working and technostress, or in other words stress that can be end users experience due to excessive use of ICT (Ragu-Nathan et al., 2008). According to the technostress concept, stress may derive from technology's invading character, its occasional overload, or complexity. The main study precisely indicated that greater technostress (including technology overload, invasion, and complexity) predicted individuals' negative emotions, positive emotions, job satisfaction, emotional exhaustion, and cognitive weariness. Technology use, and precisely technostress can, thus, inform the results provided by the EWW scale. Moreover, interviews in Chapter 4 proposed that remote e-workers were indeed inclined to feel stressed, especially with the problematic use of emails. Their narratives stressed the importance of individuals choosing to use the most appropriate tool (for instance, would a phone call solve the issue quicker and more efficiently?), and

also put some thought into email use so the message comes across well. More than ever, individuals are called to rethink about their use of technological means, to effectively communicate with colleagues and supervisors. Additionally, the invading character of technology was discussed throughout the interviews with individuals outlining different strategies to deal with this invasion, such as turning their mobile devices off. ICT use can be an individual responsibility. Yet, organisations are still expected to establish policies concerning healthy technology use, as this may lead to increased stress levels (Lee, Chang, & Cheng, 2014).

#### ***8.3.3.6. The importance of a supportive and trusting organisational culture***

The organisation and the surrounding culture can play a pivotal role to the success of the remote e-working arrangement, consequently impacting individuals' well-being. This was supported throughout this thesis and the individual studies conducted. Particularly, systematic review findings (Charalampous et al. 2018) supported that organisations' understanding about individuals' needs to balance their work and live spheres was reflected on individuals' opportunities for promotion and autonomy (e.g., Gálvez, Martínez, & Pérez, 2011). Remote e-workers' qualitative narratives presented in Chapter 4 concluded that an overall positive, supportive, and trusting organisation culture contributed to individuals' satisfaction and commitment levels. It also lessened worries about being forgotten when working away from an office environment. In a similar vein, both the pilot and main study supported associations between overall social support, and managerial support for remote e-working practices and individuals' well-being (especially job satisfaction and organisational commitment). Moreover, as shown in Chapter 7, organisational trust (as measured by the EWL scale) was associated with well-being of remote e-workers.

These findings are reflected in previous research suggesting that helpful and supportive organisational culture, where individuals are enabled to better juggle personal and working lives, can increase individuals' satisfaction with their organisation, opportunities provided, reducing psychological strain and social isolation (Bentley et al., 2016; Gálvez et al., 2011). Choi (2018) suggested that when remote e-working practices were supported by institutions and managers, turnover intentions tended to be lessened. It was suspected that this could be due to managers and organisations being more inclined to support individuals and offer them resources (e.g., technological tools), investing on developing essential skills, and strategies of dealing with a remote e-working workforce. Getting more information about the organisational context and culture, can thus allow a more meaningful explanation of the *Interaction between the organisation factors* as assessed by the EWW scale.

#### **8.3.3.7. *The impact of the main work location***

As per the Introduction of this thesis, researchers in the field have predominantly studied individuals working from home as an alternative to the office location (e.g., Richardson & McKenna 2014; Vander Elst et al., 2017). This may restrict our understanding considering that individuals do tend to work from a greater variety of locations (Eurofound and the ILO, 2017). Thus, a greater variety of working patterns was considered by this research, including a greater range of remote e-workers (e.g., from full-time working from home to splitting time in a variety of work locations). Qualitative narratives (Chapter 4) and demographic information collected in both the pilot and main studies (Chapter 6 and 7) allowed examining the impact of different work locations.

Thus, differences in remote e-workers' experiences, and precisely well-being levels, as a function of individuals' main work location were identified and are worth acknowledging. In particular, the qualitative study (Chapter 4) concluded that the type of

remote e-working can contribute to individuals' well-being. More explicitly, employees who were travelling a lot, and were doing overnights at hotels were the ones who reported the more psychosomatic symptoms mentioning that "*you can feel stiffed in a car*". It was also very likely that individuals' eating habits would deteriorate as they were often eating what was on offer. These individuals were the ones who appreciated the most days working from home as it allowed them to physically rest and avoid commuting. Additionally, regardless of a small number (16 individuals/7.9% in the pilot study; 45/11.3% in the main study) individuals who worked mainly from other locations stated greater levels of psychological distress compared to individuals working from home (see pilot study). These individuals also experienced greater levels of negative emotions compared to individuals working mainly from an office location (i.e., main study). Taking into considering that 'other location' included individuals working from clients offices, and working while commuting suggests that this specific sample of remote e-workers may face more challenges than remote e-workers who are working mainly in an office or home location. This is also something that it is worth further examining.

Moreover, both the pilot and main study suggested that individuals working mainly from an office location stated lower levels of job satisfaction as compared to those working for the majority of their time in a home location. This finding is in line with research identifying links between job satisfaction and working remotely (Charalampous et al., 2018). Working mainly from an office location was also associated with better ergonomics, better psychosomatic health, and less musculoskeletal symptoms (compared to working from home, see pilot study); as well as lower levels of fatigue (compared to individuals working mainly from other locations, see main study). This provides additional support for the argument made earlier about the importance of paying more

attention to ergonomics when e-working remotely, as this may also have an impact on individuals psychosomatic health.

#### **8.4. Additional validation of the E-Work Life (EWL) scale.**

A further aim of this study was to provide additional validation of the E-Work Life scale (EWL; Grant et al., 2011, 2013, 2019) as it can be a relevant scale to be used alongside the EWW scale when monitoring individuals' remote e-working experience.

As discussed in Chapter 7, total EWL scale items increased since publication (Grant et al., 2019) to 22 items. Newly devised items were inspired by the interviews conducted in Chapter 4. Confirmatory Factor Analysis (CFA) tested the replicability of the updated 22-item version of the EWL scale factor structure (see Chapter 7). CFA proposed the deletion of only two items, leading to a final 20-item version of the EWL scale. In this final version, similarly to Grant et al. (2019), a four-factor solution was confirmed, identifying the dimensions of: *Organisational Trust* (5 items), *Flexibility* (4 items), *Work-Life Interference* (6 items), and *Effectiveness* (5 items). Appendix V provides the last version of the scale. Factor Determinacies were also very good.

The importance of utilising the EWL scale lies in the fact that monitoring remote e-working's effectiveness can outline both potential benefits and barriers to this way of working. It enables key issues related to remote e-working to be identified and strategies formulated to improve the e-working experience related to the four areas and increased to cover more detailed aspects of well-being when used in conjunction with the EWW scale. Individual, supervisory, and organisational guidance can be informed by these findings and potentially policies can be enriched when managing the remote e-working arrangement.



## **8.5. Limitations and Future research**

This research comes with several limitations that are worth acknowledging. These limitations can in some cases be counterbalanced by the strengths of the current research, and in other may demand future research to fill these gaps.

A first limitation stems from the systematic review conducted and its specific inclusion and exclusion criteria being set, which provided a very specific focus. Particularly, included studies from a specific time frame as well as focused on knowledge workers who were argued to be most likely influenced by remote e-working (Charalampous et al., 2018). Harker et al. (2012) proposed that these are usual limitations of systematic reviews. However, these criteria enabled a better management of the retrieved studies. Also the good number of studies included in the review (i.e., 63 studies), the systematic and transparent way of analysing retrieved findings, as well as the rigorous theoretical framework enhanced the quality of the review.

In relation to the use of qualitative methods used, there is some subjectivity linked to findings interpretation. To manage this limitation, an external researcher was involved in the initial stages of coding, comparing their coding with the one provided by the PhD researcher, discussing emerging themes too. Themes were also discussed within the supervisory team, and quotes were used to demonstrate and confirm that findings have directly arisen and are deep-rooted in participants' narratives (Whittemore et al., 2001).

Another limitation was related to the use of self-reported measures to assess the main concepts of interest. In the two cross-sectional studies in the thesis (i.e., pilot and main study) a variety of self-reported validated measures were used (e.g., psychological distress, sleep problems) which were included in the online questionnaires. Podsakoff et al. (2003) suggested that self-reported measures can be problematic for the reason that they can lead to 'common method variance'. This suggests that the source of variance

results from the measurement method used, instead of being an outcome of the actual constructs examined. In order to minimize common method variance, a variety of validated tools was used where participants were called to respond on different point verbal instructions and scale points (Tourangeau, Rips, & Rasinski, 2000).

A further limitation is the cross-sectional character of the quantitative studies (i.e., pilot and main study) which obstructs the identification of causal relationships between the EWW scale and existing validated measures. Future longitudinal studies can meet this need, as well as assessing theoretical models can enable researchers to also recommend potential mechanisms underlining the relationship between remote e-working and well-being at work. Longitudinal invariance would also prove test-retest reliability for the EWW scale (and potentially the EWL scale). Test-retest reliability suggests that the score provided by a scale is consistent through time and only changes when the assessed variable change (DeVellis, 2016). Thus, we would expect individuals' score on the same questionnaire, in two different time points, to remain the same; as we would expect people who are on the same level on the assessed construct to get the same score (Field, 2013). Test-retest reliability something which is addressed in a future study (see below).

A further potential limitation can be the limited sample size in the pilot study. Although, this sample size was considered adequate by some researchers (e.g., Stevens, 2002), larger samples may be warranted (Tabachnick & Fidell, 2007). Recruiting participants who work at least to some extent remotely was challenging. This could potentially mirror the resistance that many organisations had in promoting flexible working practice. The COVID-19 pandemic highlights the weakness of not preparing the workforce to this practice, and might even result in a change in the work-practice landscape. Considering hypothetical scenarios, some organisations might have realised that remote e-working can be a feasible working arrangement that does not affect

productivity; where workers might have particularly enjoyed it and even realised that the work can be effectively conducted from home, or at least that working from home can be more effective to deal with some specific job tasks.

Furthermore, although the current PhD thesis supported the sound psychometric properties of the EWW scale, the development and validation of a scale is considered to be an ongoing processes, going beyond the initial item development (Comrey, 1988; Nunnally, 1978). Therefore, this tool has not been finalised, making further validation warranted. Given that the phenomenon of remote e-working has seen growth in different countries around the world (Eurofound and the ILO, 2017), it is important to test the validity of the newly devised EWW scale in diverse samples and cultural groups (DeVellis, 2016). Briggs and Cheek (1986) emphasised the essential role of replicating the factor structure, as when this is absent the value of the factor is of little value. This can, consequently, support both the validity of the newly devised EWW scale and further established the proposed three-dimensional conceptualisation of work-related well-being.

Cross-national validation of scales is a common practice within the organisational psychology field (for an example see the Italian version of the Utrecht Work Engagement Scale by Balducci, Fraccaroli, & Schaufeli, 2010). To cover this need, both the EWW and EWL scales have been translated in Italian; and EWW has been translated in Greek for ongoing projects in Italy and Cyprus respectively. These studies will primarily allow for a cross-national validation of the scales, which can then be expanded by translating the scale in additional languages, replicating their use in more countries and capturing the cultural context. Additionally, with the Italian study employing a longitudinal design, and the Cypriot study a diary study design (i.e., collecting data at different time points), the limitations discussed above can be tackled, identifying causal relationships between both scales and theoretically relevant measures, and testing for test-retest reliability.

Findings from this research prompt the need for implementing effective interventions which can either treat/ameliorate drawbacks from remote e-working on individuals' well-being (such as social isolation) or prevent them from arising (e.g., establishing that individuals have healthy lifestyle habits such as leaving their desks and have enough breaks during the day). Nevertheless, examining interventions was beyond the scope of the present study, something that can be addressed in future studies.

Moreover, the pilot and main study did not further explore individual differences and personality traits, due to the length of the online surveys used. However, both the systematic review and interviews conducted in Chapter 4 proposed that individual differences and personality traits could play a moderating role between remote e-working and well-being at work. Future research should definitely gain more insight into that.

Nevertheless, the key strengths of this research counterbalance the discussed limitations. The mixed-methods approach employed allowed the researcher to access 'multiple realities' which can be better understood when combining the constructive and relative character of qualitative studies and the reductionist and empirical character of quantitative ones (Johnson & Gray, 2010). Moreover, the newly developed EWW scale was based on very strong theoretical foundations, combining a thorough review of existing validated measures and findings from a series of semi-structured interviews. Lastly, the new scale showed face, content, construct, and criterion-related validity and was found to be internally reliable. Similarly, the factor structure of the EWL scale was replicated, proposing that it is indeed a robust tool to use.

## **8.6. Practical applications**

The findings from, predominantly, the development of the EWW scale, along with the replicability of the EWL scale and the overall nuanced conclusions reached in the current PhD research revealed best practice for remote e-working. These are presented below and

can inform existing organisational practices and strategies, to ensure that individuals remain healthy and productive when working away from a traditional office environment.

The newly developed EWW scale can be used to measure remote e-workers' well-being at work; considering multiple and relevant dimensions. EWW scale's multidimensionality is in line with the conceptualisation of the workplace that is not limited to a focus on one aspect of well-being, but instead considers other aspects equally relevant; for a more holistic understanding of well-being at work. This may be helpful monitoring both psychological functioning and flourishing (e.g., positive emotions and perceiving oneself as competent) and psychological problems (e.g., social isolation, and emotional and cognitive exhaustion). Similarly, the EWL scale (that can be used alongside the EWW scale) can also be used to capture the equally important areas of: *Work-Life Interference*, *Productivity/Job Effectiveness*, *Flexibility*, and *Organisational Trust*.

The EWW scale can also be used for different ends and at different stages of a remote e-worker's career. For example, in the initial stages of e-working remotely, the scale may provide relevant information to understand how employees may adjust to this working practice, based on the assessment of *Individual factors*, the *Interaction Between The Individual and the Organisation*, and *Health*. It could for some individuals remote e-working works very well, as they get the headspace they need to concentrate on their work, whereas creates obstacles for other employees who experience great levels of social isolation. Employees may need special support when transitioning to remote e-working. This could be achieved by creating educational videos, online modules or in-person workshops in which experienced remote e-workers in the organization share their tips for success and overcoming challenges (e.g., social isolation). Implementing a buddy system can also be a good practice during which remote e-working employees are matched with experienced remote e-workers who can share their personal experiences, tips and tricks.

Alternatively, new remote e-workers can be connected with office-based counterparts to help maintain co-worker relationships and to keep each other accountable.

The EWW scale can also be used as part of the performance appraisal process as either a self-reflective tool or an assessment tool that the manager and employee can utilise to evaluate and document individuals' remote e-working experience; with a view to enhance this experience as well as individuals' output and efficiency. With organisations acknowledging the impact that remote e-working may have on individuals' well-being a more supportive organizational culture is established, where individuals feel as though they are trusted or their efforts are appreciated. It is, also, proposed that in cases where managers do not feel confident in managing remote e-working employees then training focusing on effective management practices for remote e-working is needed.

The EWW scale may also inform the design of tailored interventions aimed at improving the remote e-working experience. For example, in cases where individuals feel exhausted or overwhelmed by remote e-working (as measured by the EWW scale) organisations may decide to circulate weekly email blasts that promote tips for well-being (e.g., getting up regularly from your chair and stretching) and remind individuals the importance of 'switching-off' and detaching from work. Using the EWL can also identify issues with managing working and personal life organisations, which could then inspire practices that help remote e-workers negate potential blurring of home and work boundaries. To achieve this, discussions can be initiated with remote e-workers to understand their personal preferences for working hours and set and communicate boundaries that respect these preferences. For example, when a manager sends emails outside of working hours, it is clearly communicated that they do not expect a response until the following day.

Overall, the results provided by both the EWL and the EWW scales can allow individuals to reflect and become more aware of their own individual working preferences. In order to gain the most from the flexibility provided from this working arrangement, individuals need to discover which pattern works best for them. For instance, some people may enjoy the permeability between boundaries but some others may prefer following a routine, with concrete and/or mental boundaries between work and personal life.

### **8.7. Overall conclusions**

The present PhD research enabled the development of the timely and highly original and innovative E Work Well-being (EWW) scale, which is the first constructed tool aiming to monitor remote e-workers' well-being at work. The methodological rigour of mixed methods used when developing the tool and expanding on our knowledge on the topic enhances our confidence that EWW scale can detect crucial aspects linking to individuals' well-being. The EWW scale is underpinned by Van Horn et al.'s (2004) five-dimensional model, which was supported to an appropriate and theoretically robust framework to support the concept of well-being at work within a remote e-working population. This conceptualisation of well-being enabled capturing a rich understanding of remote e-workers well-being at work; throughout the present thesis. Notwithstanding the relevance of Van Horn et al.'s (2004) model, this PhD research also discusses interesting theoretical insights about the structure of well-being at work, presenting a more parsimonious model was supported to potentially better represent how well-being manifests itself. The newly proposed dimensions comprised the *Individual Factors*, the *Interaction Between The Individual and the Organisation*, and *Health*; which are worth to be further examined by future research. Moreover, the present thesis provides further validation checks for the EWL scale (Grant et al., 2019). Findings supported that the EWL scale is related to the

EW scale but it is simultaneously distinct from it; something that recommends that the scales can be used alongside (to complement) each other. The unique understanding provided by the new EW scale and the already existing EW scale can be a means to investigate the multi-dimensional impact that remote e-working can have on individuals' well-being (and overall remote e-working experience) not only for academics but also organisations, supervisors, and Human Resource (HR) professionals. In turn, the scales can guide and inform policies and strategies to ameliorate any issues linked to this working arrangement. This seems to be a worthwhile future endeavour, especially when considering the rapid change of the future of work, and the impact this can have on individuals' well-being and overall working experience.



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## **Appendices**

### **Appendix A: 28-items version of E-Work life scale (Chris et al., 2011)**

Some materials have been removed from this thesis due to Third Party Copyright. Pages where material has been removed are clearly marked in the electronic version. The unabridged version of the thesis can be viewed at the Lanchester Library, Coventry University.

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## **Appendix B: 17-items version of E-Work life scale (Chris et al., 2019)**

Some materials have been removed from this thesis due to Third Party Copyright. Pages where material has been removed are clearly marked in the electronic version. The unabridged version of the thesis can be viewed at the Lanchester Library, Coventry University.



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## **Appendix C: Certificate of Ethical approval for the Systematic Review study**



### **Certificate of Ethical Approval**

Applicant:

Maria Charalampous

Project Title:

Systematically Reviewing Remote E-workers' Well-being at  
Work: A Multi-dimensional Approach

This is to certify that the above named applicant has completed the Coventry University Ethical Approval process and their project has been confirmed and approved as Low Risk

Date of approval:

21 June 2018

Project Reference Number:

P72625

## Appendix D. PsycINFO search<sup>6</sup>.

Telework\* OR DE "Telecommuting" OR telecommut\* OR "home-based work\*" OR "home-based telework\*" OR "home-based e-work\*" OR "home-based telecommut\*" OR homeworking OR homeworker\* OR home-work\* OR "working from home" OR DE "Virtual Teams" OR "virtual office" OR "virtual work" OR "satellite office" OR "remote employee\*" OR "remote work\*" OR "remote office\*" OR "e-work\*" OR "satellite center" OR "satellite centre" OR "electronic home work" OR "distance work\*" OR "rural work\*" OR "flexible work\*" OR "alternative work\*" OR "distributed work\*" OR "mobile work\*" OR "multi locational work\*" OR "multi location work\*" OR "isolated work\*" OR "peripatetic work\*" OR "nomadic work\*" OR "dispersed technical work\*" OR "solitary work\*" OR "sole work\*" OR "lone work\*" OR "agile work\*" OR "smart work\*" OR "hotelling" OR "multi location mobility" OR "multi-location mobility" OR "functional relocation" OR "telecentre" OR "telecenter" OR telecottage

AND

DE "Well Being" OR "wellbeing" OR "well-being" OR "well being" OR "quality of life" DE "Occupational Health" OR DE "Emotions" DE "Job Satisfaction" OR DE "Organizational Commitment" OR "emotional exhaustion" OR "affective wellbeing" OR "affective well-being" OR affective well being" OR "musculoskeletal discomfort" OR "musculoskeletal pain" OR "health complaints" OR "ill health" OR "illness" OR DE "Stress" OR "strain" OR "psychosomatic wellbeing" OR "psychosomatic well being" OR "psychosomatic well-being" OR "psychosomatic health" OR "physical health" OR "physical well-being" OR "social wellbeing" OR "social well being" OR "social well-being" OR DE "Social Interaction" OR DE "Social Isolation" OR DE "Cognitive Ability" OR "cognitive weariness" OR DE "Concentration" OR "work-related rumination" OR "switch-off from work" OR "switch off" OR "switching-off" OR "cognitive wellbeing" OR "cognitive well being" OR "cognitive well-being" OR DE "Professional Competence" OR "competence" OR "knowledge" OR "skill" OR abilit\* OR "self-efficacy" DE "Autonomy" OR DE "Occupational Aspirations" OR "aspiration" OR "interest" OR "growth-need" OR "accomplishment" OR "professional wellbeing" OR "professional well being" OR "professional well-being

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<sup>6</sup>Relevant studies should include at least one keyword from each set of keywords.

**Appendix E: Certificate of Ethical approval and accompanying documents (i.e., Participant Information sheet, Consent form, Debriefing statement, Student Research project assessment for the Qualitative study)**



**Certificate of Ethical Approval**

Applicant:

Maria Charalampous

Project Title:

An exploration of the relationship between remote e-working and work-related well-being

This is to certify that the above named applicant has completed the Coventry University Ethical Approval process and their project has been confirmed and approved as Medium Risk

Date of approval:

25 April 2016

Project Reference Number:

P41894

## **Participant Information Sheet**

Faculty of Health and Life Sciences

**Study Title:** An exploration of the relationship between remote e-working and work-related well-being



My name is Maria Charalampous. I am PhD Psychology researcher at Coventry University and I am carrying out this research for my thesis. You are being invited to take part in the research study about remote e-workers' work-related well-being. Before you decide whether to participate it is important that you understand why the research is being done and what it will involve. Please take time to read the following information carefully and ask questions about anything you do not understand.

### **What is the purpose of the study?**

The purpose of the study is twofold. Firstly, the interview will explore whether working remotely, away from the traditional office, can relate to work-related well-being. Specifically we will be examining whether spending at least a portion of your working time away from your head office (no matter if this is home, another site of the company, hotel or train), making use of technology to stay connected to your workplace can link to your well-being at work. Since this study targets the workplace, well-being is explored as a work-related concept and it includes the affective, the social, the physical, the cognitive and the professional element. Secondly, the interview will attempt to identify core skills and competencies that enable remote e-workers to be resilient and effective employees.

### **Why have I been invited to take part in the study?**

You have been invited to take part in this study as you are an employee (above the age of 18) who spends a portion of your working time away from your company's head office and the study explores remote e-workers' well-being at work.

### **Do I have to take part?**

There is no obligation to take part - it is entirely voluntary. If you decide to participate you are free to withdraw from the study at any given time in the two weeks following your interview, without giving a reason. You can withdraw by contacting the PhD researcher on email and providing her with your participant information number. If you decide to withdraw all your data will be destroyed and will not be used in the study. There are no consequences to deciding that you no longer wish to participate in the study.

### **What will happen to me if I take part?**

If you agree to take part in this study you will be asked to sign a consent form and you will be given this information sheet to keep along with a copy of your signed consent form. Your participation will involve a one-to-one semi-structured interview with the

PhD researcher lasting approximately 60 minutes. This could be conducted in person at an agreed place depending on your preferences.

The interview will mainly explore your experiences of remote e-working and how this links to your well-being at the workplace. Initially, you will be asked to answer some general demographic questions about yourself such as your age, gender, work status and some questions regarding your e-working experience and the use of technology during this working pattern. Then you will be called to describe what you think are the most essential competencies to be an efficient and resilient e-worker. Lastly you will be asked to talk about the way you perceive your well-being at work and how remote e-working can have a specific impact on that.

In order not to lose any important information given by you, the interview will need to be recorded. Any information you provide will be processed in the strictest confidence by the researcher and no one else apart from the research team will have access to the transcripts. By the end of the interview, your data will be anonymised, given a pseudonym. Once the interviews will be transcribed, the audio file will be deleted.

During the interview, you will be allowed to take a break if you need to. You are at a liberty to withdraw at any time during the interview, if for any reason you find the study upsetting and you do not have to answer to any of the questions that you do not feel comfortable with.

### **What are the possible benefits of taking part?**

The current interview will encourage two-way communication and thus you may benefit from being able to talk in confidence with someone about your experiences when working remotely. This can be a really relieving experience. Additionally the information we get from this study could help both researchers and your company to understand how working remotely experiences can link to well-being in the workplace.

### **What are the possible disadvantages and risks of taking part?**

As part of the study involves discussing about your personal experiences and feelings when e-working there is a slight risk that this could raise some anxieties or concerns, although we strongly believe that this is very unlikely. If you find that this happens, please feel free to take a few minutes to compose yourself and do not hesitate to let the interviewer know. Please be aware that you are under no obligation to carry on with the interview if you are finding it upsetting. Please be assured that you do not have to answer any questions that you do not feel comfortable with.

Another possible disadvantage of taking part in the study is that you may feel a little tired at the end of the interviews. It would be recommended that you do not arrange the interview on a very busy or demanding day for you.

### **What if something goes wrong?**

If you have to cancel the interview session, please contact the researcher and let her know as soon as possible. You can skip any question that you do not feel comfortable with. As mentioned above, in case you change your mind about taking part in the study you can withdraw at any point during the interview and at any time in the two weeks following it without given any reason.

We do not envisage anything that will go wrong, however if participating in this study raises any issues for you, or if you have concerns about your health, we recommend that you contact your GP or a Health professional. You can also seek emotional support from Samaritans ([www.samaritans.org](http://www.samaritans.org)). Samaritans is a registered charity in the UK that aims at providing emotional support to anyone in emotional distress through their telephone helpline (08457 90 90 90) or email address ([jo@samaritans.org](mailto:jo@samaritans.org)).

Content removed on data protection grounds

### **Will my taking part in the study be kept confidential?**

Yes. The confidentiality of your responses is guaranteed by the researcher. All of the information you give will be anonymised so that those reading the reports from the research will not know who has contributed to it or what your responses were. Your personal data (i.e., recordings and interview transcripts) will be handled in accordance with the UK Data Protection Act 1998 so that unauthorised individuals will not have access to it. Once your interview is transcribed by a transcriber, the recorded version of the interview will be deleted and the researcher will encrypt any identifiable data as codes. When the data has been entered into a computer file, your answers will be associated with your code number and access to the file will be password protected. The research data will be stored and retained for at least five years from the end of the project, in accordance with the Coventry University's Retention of Data policy.

### **What will happen to the results of the research study?**

The results of the study will be written up in a thesis report that will be made publicly available in the University's online repository. Findings may also be published in a journal article or might be used in future reports, articles or presentations by the researchers. No individual participants will be identifiable in these reports. If you wish to receive a summary of the findings once the study is completed or if you would like to take part in future studies, please send your request in October 2016 to the PhD researcher via email; her email address will be available at the end of the debrief.

Moreover, your individual answers will not be shared with your employers, managers or supervisors. However, it worth mentioning that your company will receive a report and a couple of workshops will be conducted by the end of the study. Both the report and the workshops will summarise the general findings of the study, in order to help your company decide what needs to be amended to improve your e-working experience.

### **Who is organising and funding the study?**

The study is being run by a PhD researcher from Coventry University (Maria Charalampous), supervised by Dr Christine Grant, Dr Carlo Tramontano and Professor Elizabeth Grunfeld. The research will be supported by the 'SPIDER placement scheme' and 'Pump Prime Scheme' at Coventry University.

**Who has reviewed the study?**

The study has been reviewed and has received a favourable ethical opinion from the Coventry University's Research Ethics Committee.

**Who should I contact if I have a question or concerns about this research?**

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**Thank you for taking time to read this information sheet, please do not hesitate to contact us if you have any further questions.**



## Consent Form

Faculty of Health and Life Sciences



**Participant Reference Code:** \_\_\_\_\_

- I voluntarily agree to take part in the “**An exploration of the relationship between remote e-working and work-related well-being**” study.
- I have read and understood the Information Sheet provided. I have been given a full explanation of the nature, purpose, and likely duration of the study, and of what I will be expected to do. I have been advised about any possible anxieties or concerns, which may result. I have been given the opportunity to ask questions on all aspects of the study and have understood the advice and information given as a result.
- I consent to my personal data, as outlined in the accompanying information sheet, being used for this study (e.g., being anonymously used in conferences and journal articles). I understand that all personal data is held and processed in the strictest confidence, and in accordance with the Data Protection Act (1998).
- I agree to be recorded and for anonymised quotes to be used as part of the research project
- I understand that I am free to withdraw from the study at any time in the two weeks following the interview without giving a reason.
- I confirm that I have read and understood the above and freely consent to participating in this study. I have been given adequate time to consider my participation and agree to comply with the instructions and restrictions of the study.
- By signing below I agree with **all** the above statements and I am consenting to take part in the study.

Name of participant: .....

Signature of participant: .....

Date: .....

Name of Researcher: .....

Signature of researcher: .....

Date: .....

**Debriefing Statement: An exploration of the relationship between remote e-working and work-related well-being**

Faculty of Health and Life Sciences



You have just been asked to share your experiences when e-working remotely, away from your main company's office, at least partly of your total working hours. These experiences were linked to your well-being in the workplace.

The purpose of the current study is twofold and you have participated in its first phase. Particularly, you helped the research team to gain a greater understanding of how remote e-working links to e-workers' well-being at work. Research has suggested that well-being at work includes different dimensions of employees' lives (i.e., the affective, the professional, the social, the cognitive and the psychosomatic one) and this study explored each one of them. Additionally, you were asked to talk about core skills and competencies when e-working. This helps the research team to develop a preliminary competency framework of the knowledge, skills and behaviours that enable an e-worker to be more effective and resilient. All the information collected from your interviews will be used for the purposes of the second phase of this study. In this second phase, a pool of items around e-workers' well-being at work will be generated and then used for the development of a new scale in this field of study. This is an innovative piece of research because to date there is no developed tool which focuses on e-workers well-being at work.

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We have tried to ensure that the questions in this study do not cause any distress. However, it is not uncommon to experience some anxieties or concerns when discussing about personal experiences during interviews - support is available. If participating in this study raises any concerns about your health, we recommend that you contact your GP or a Health professional. You can also seek emotional support from Samaritans ([www.samaritans.org](http://www.samaritans.org)). Samaritans is a registered charity in the UK that aims at providing emotional support to anyone in emotional distress through their telephone helpline (08457 90 90 90) or email address ([jo@samaritans.org](mailto:jo@samaritans.org)).

**Thank you for your participation in this research. Your help is much appreciated!**  
**Please feel free to contact the researchers regarding any thoughts or issues about the nature of this study or to further discuss your remote e-working experiences.**

## STUDENT RESEARCH PROJECT RISK ASSESSMENT

Person(s) undertaking project:	Maria Charalampous
Project supervisor:	Dr Christine Grant

<p>Brief outline of project: <i>Outline the types of activities that will take place or items fabricated i.e. face to face interviews, public surveys, water sampling, machining vehicle parts, brazing etc.</i></p>	<p>During the first month of the placement:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Conduct interviews with e-workers (x30). Duration: 1 hour each. (Interviews will be conducted either in person at an agreed place between the interviewee and the researcher or via Skype)</li> <li><input type="checkbox"/> Transcribe data and produce items for the E-Work Wellbeing scale: During and after the first month of the placement.</li> </ul> <p>One month break from the placement to finalise the data transcription</p> <p>During the second month of the placement:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Run wellbeing workshop (focused on e-workers or typical employees). Number and duration: Negotiable – depending on Novus’ needs/ preferences</li> <li><input type="checkbox"/> Provide access to the existing E-work Life tool, to generate individual reports (each report costs £10) so as employees could keep an eye on their work-life balance, wellbeing and job effectiveness</li> <li><input type="checkbox"/> Group sessions <i>could</i> take place to discuss employees’ outcomes of the e-work life reports.</li> </ul> <p>By the end of the placement:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Produce client anonymised summary report of summarised findings.</li> </ul>
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<sup>7</sup> A pseudonym is used instead of the real name of the organisation to ensure confidentiality.

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## Appendix F: Remote e-worker semi-structured interview

### E-Working Interview on Work-Related Well-being

#### Demographics Questionnaire

Unless otherwise stated please place an x in the box as provided giving your response to each question shown below.

**Are you happy to specify your gender as...?**

Male ☐ Female ☐

**What is your marital status?**

Single ☐ Married ☐ Divorced ☐ Widowed ☐ Cohabiting ☐

Other please specify.....

**How old are you?**

Please specify: .....

**How many dependent children (under the age of 18) do you have?**

Please specify: .....

Please comment where they are residing

**Is there anyone else you take care of on a regular basis?**

Please specify .....

**Which sector do you work in? <sup>8</sup>**

Public ☐

Private ☐

Not Applicable ☐

Other, please specify .....

---

<sup>8</sup> Not for Novus interviews since we know for them

**Please indicate how many hours are you contracted to work?**

☐ Part time less than 21 hours

☐ Full time

☐ Part time more than 21 hours

☐ Full time student

☐ Part time student

☐ Unemployed

Other, please specify .....

**Do you ever work extra hours / above 'normal' time?**

If so, please specify.....

**What drives you to work extra hours?**

*Prompts: enjoyment/involvement, workload, habit?*

**Please specify:**

1. How long have you been working:

(a) For your current organization.....

(b) Overall .....

**Your Role**

1. What is your role title? What is your role within the organisation? Can you please describe briefly describe your responsibilities?
2. Are you part of a team? If so how large is your team? Do you manage part of this team?

**E-working practises**

1. Please can you indicate what is your understanding is of the term e-working?
2. Can you please read the definition, do you agree with this as a description of e-working? Are there any other aspects you could add to this definition?

E-working is often defined as: working independently (i.e., off site from your head office), using technology to communicate with others remotely. For example, it could be defined as 'any form of substitution of information technologies (such as



telecommunications and computers) for work-related travel: moving work to the workers instead of moving workers to the work' (Nilles, 1998).

3. How does your role incorporate e-working?

*Prompt: -Could you describe to me a typical day when you e-work remotely?*

*-Use of e-working practices such as: email, teleconferencing, access to shared files and databases*

4. Would you consider yourself to be experienced/effective e-worker? If not, why?

*Prompt: E.g. - Get job role done in this way*

*-Manage work and personal life boundaries well – do you integrate or separate them? Does this work for you?*

a. How frequently do you work e-work remotely per week?

Less than a day per week	<input type="checkbox"/>	2-4 days per week	<input type="checkbox"/>
At least one day per week	<input type="checkbox"/>	Full time away	<input type="checkbox"/>

b. How long have you been e-working remotely:

(a) For your current organization.....

(b) Overall .....

**Remote E-working and Well-being**

1. To begin with, I'd like to get you thinking about the notion of well-being in the working environment. Could you think and describe to me what well-being at work means to you?

*Prompt: (one definition) Well-being at work is usually defined as the quality of employees' experience and functioning at the workplace.*

*Could you think of any specific dimensions/ spheres of well-being at work?*

2. Based on your perceptions of well-being at work, do you think that working remotely has a specific influence on this? And if yes, how?

"It was supported that well-being at work refers to many dimensions of employees' working lives. Thus, I would like to discuss with you about these dimensions and I would like to hear how your e-working experiences influence each one of those dimensions."

## Professional Wellbeing Dimension

1. How much autonomy do you have in your role? Could you give me some examples?

*Prompt: What contributes to this autonomy? Is it for instance your role per se, the organization or your personal characteristics?*

2. To what extent do you feel that e-working remotely changes how autonomous you are? Does e-working help or restrict you to do things in your job position? Could you give me some examples?

3. Employees often have their individual occupational aspirations. For instance, they might want to improve in their job position (if this is possible), or they might want to gain more skills which will help them to improve in their current position. Based on that, I would like you to think and describe to me any occupational aspirations you have as an employee.

4. Does e-working have an impact on those occupational aspirations?

*Prompt: Sometimes employees feel they are not counted by their colleagues or supervisors because they are not present in a daily basis*

5. Can you describe the **knowledge** required to e-work effectively? By knowledge we mean the theoretical or practical understanding of a subject. For e-working this might be technical knowledge of applications that help to self-manage time/manage email? Can you give any examples?

6. Can you describe what sorts of **abilities** are required for e-working and how these may be different to working in an office? By abilities we refer to the qualities of being able to do something such as communicating effectively with the team line manager – by virtual means.

7. Can you describe any **skills** that you think are uniquely required for e-working? By skills we mean the proficiencies developed through training or experience, such as to learn how to use a specific program? For example, learning how to use remote working systems, being able to share information using webinars etc

*Prompt: Can you give some examples of these in action?*

8. Can you describe healthy and non-healthy behaviours related to e-working?

*Prompt: Examples could be dietary and physical activity habits*

- a. Could you describe what strategies, if any, do you use to e-work healthily?

*Prompt: Such as making sure you have breaks?*

- b. Does e-working change your lifestyle habits and if so, in what ways?

*Prompt: Such as working late, getting up late, hobbies, dietary and physical activity habits*

*Does your role lead to a more sedentary life style – i.e. sitting at the computer*

9. What sort of knowledge, skills, abilities and behaviours do line **managers** require to manage e-workers effectively?

*Prompt: use of technology, etiquette, role modelling WLB*

10. Do you see any differences across colleagues / different age groups in managing technology and boundaries? Do you copy or emulate any of these behaviours?
11. How would you define agile working and does this have different KSAs and behaviours?

**\*\*Line Managers only:**

1. How do you manage e-workers effectiveness? What do you consider as the important factors in managing these members of staff?

*Prompt: For instance, do you consider it as important to be a role model for them, email management, time out?*

*More feedback, regular contact to keep an eye on how they are?*

2. To what extent do you see it as your role to help e-workers manage their work-life balance?
3. Do you think there are specific KSAs and behaviours related to managing e-workers and their well-being? If so, can you please give examples of these?

<b>Affective Wellbeing Dimension</b>
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**Job satisfaction**

1. Could you describe to me how much satisfied you are with your current job role, your colleagues and organisation in general? Could you give me some examples?
2. To what extent do you think that working remotely makes you feel more or less satisfied with your job, colleagues and organisation? Could you give me some examples?

**Organisational commitment**

3. Now, could you think and talk to me about how much you are ready to go the extra mile for your organization. This might be because you and your organisation share similar values and visions?
4. Would you say that working away from the main office (at least for some period of time) changes your commitment towards your organization? If so, could you give me an example?

## Emotional exhaustion

5. Sometimes it happens that people feel emotionally drained or tired. This could be as a result of having many deadlines or high and intensive workload. To what extent have you felt like this during the last month?
6. How would you describe that working remotely increases or decreases those feelings? Could you give me an example of how and why this happens?

## Emotions in general

7. Take a moment to think, could you describe to me what kind of emotions related to your working experiences you experienced in the past 30 days?

*Prompt: These emotions can either be positive such as optimistic or cheerful or they can be negative such as anxious or annoyed.*

8. How does e-working, if at all, affect your emotions? Could you give me an example?

*Prompt: -e.g., Do you ever get angry because you receive too many emails,*

*Or are you ever irritated because you have people disturbing you while you try to get some work done?*

## Physical Wellbeing Dimension

1. Does e-working cause or exasperate your current physical conditions? Would you mind giving examples of these?

*Prompt: Such as headaches or symptoms*

*Musculoskeletal irritations –might be because you are not sitting in the correct way when working away from the office?*

## Social Wellbeing Dimension

1. How would you describe your working relationships (with colleagues, supervisors)? Would you say you are pleased with them?
2. Being <sup>9</sup>away from the office usually means that you are spending less face-to-face time with your colleagues and supervisors. Is that the case for you (explore location(s) of remote work)? And if yes, how does this experience affect your working relationships?

*Prompt: Check for the physical isolated setting (time that none of the colleagues is present)*

*Introduce the personal relationships here as well-examples*

If working remotely makes a difference:

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<sup>9</sup> Even if e-workers meet other employees, they might not have face-to-face contact with their main team and managers

*Prompt: Would you state that you are satisfied or not with your social environment at work – communications - How could it be improved?*

3. Does the use of technology influence the way you structure your working relations? Why or why not? If yes in what ways?

*Prompt: Could you think of any times that the use of technology enabled your communication with your colleagues or supervisors?*

*How do you feel about communicating with electronic means instead of having face to face contact? (Do you feel that this is not enough?)*

### **Cognitive Wellbeing Dimension**

1. It is a common phenomenon that employees who are under pressure or who have a high workload can't concentrate that well or they find it difficult to take up new information. Would you say that you have experienced something similar in the past 30 days?

2. From your personal experiences, does e-working ever influence your concentration or you capacity to take up new information?

*Prompt Think about multi-tasking when e-working and email issues*

3. Now, I would like to ask you about how much you unwind or in other words switch-off after work. Do you ever find yourself occupied with work-related issues even if it is not a working time (such as during weekends or during non-working hours?)
4. To what extent would you say that e-working influences how much you switch-off from work?

*Prompt: -Is there anything specific in the nature of your job that does not let you to unwind? E.g., Role models, email etc,*

*-What keep you working motivates you to continue*

5. Do you ever feel that your personal and working life boundaries are crossed? If so, could you describe this experience to me?

### **Conclusion**

Thinking about everything we have discussed so far, would you say that you are pleased with the support you get from your organisation when e-working? Is there anything you would like your organisation to change or provide to improve your remote e-working experience?

### **Final comments**

Do you have any further comments or ideas you would like to add on the topic of e-working and employee well-being?

**Appendix G: Review of validated scales in well-being as collated from the systematic review.**

<b>Affective dimension: (i) Emotions</b>			
<b>Author/source</b>	<b>Date</b>	<b>Measures/Items</b>	<b>Cronbach's alpha (if available)<sup>10</sup></b>
Marsh & Musson	2008	<i>(Qualitative)</i> Broad research questions: “What kind of emotion do men working from home express as part of their identity performance” “What is the emotional work required by men working from home?”	
Mann & Holdsworth	2003	<i>(Qualitative)</i> 8 emotions explored Irritability / Stress / Guilt / Enjoyment / Loneliness / Worry / Resentment / Frustration	
Mann, Varey & Button	2000	<i>(Qualitative)</i> No direct question was referred to emotions, emotions were outlined and presented through interviewees' narratives.	
Van Katwyk, Fox, Spector & Kelloway	2000	<b>Job-Related Affective Well-being Scale.</b> Rated on a 5-point Likert scale ranging from <i>Never</i> to <i>Extremely often</i> . Instructions: Below are a number of statements that describe different emotions that a job can make a person feel. Please indicate the amount to which any part of your job (e.g., the work, co-workers, supervisor, clients, pay) has made you feel that emotion in the past 30 days. 30 items 1. My job made me feel at ease 2. My job made me feel angry 3. My job made me feel annoyed	Negative emotions $\alpha = .92$ Positive emotions $\alpha = .94$

<sup>10</sup> Qualitative questions and approaches were also considered, therefore Cronbach's alphas are not always relevant/available. Cronbach's alphas provided are taken from the original sources, and it is acknowledged if otherwise.

		<p>4. My job made me feel anxious</p> <p>5. My job made me feel bored</p> <p>6. My job made me feel cheerful</p> <p>7. My job made me feel calm</p> <p>8. My job made me feel confused</p> <p>9. My job made me feel content</p> <p>10. My job made me feel depressed</p> <p>11. My job made me feel disgusted</p> <p>12. My job made me feel discouraged</p> <p>13. My job made me feel elated</p> <p>14. My job made me feel energetic</p> <p>15. My job made me feel excited</p> <p>16. My job made me feel ecstatic</p> <p>17. My job made me feel enthusiastic</p> <p>18. My job made me feel frightened</p> <p>19. My job made me feel frustrated</p> <p>20. My job made me feel furious</p> <p>21. My job made me feel gloomy</p> <p>22. My job made me feel fatigued</p> <p>23. My job made me feel happy</p> <p>24. My job made me feel intimidated</p> <p>25. My job made me feel inspired</p> <p>26. My job made me feel miserable</p> <p>27. My job made me feel pleased</p> <p>28. My job made me feel proud</p> <p>29. My job made me feel satisfied</p> <p>30. My job made me feel relaxed</p>	
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Russel	1980	<p><b>Circumplex model of affect.</b> Contrasting basic emotion theories the model suggests that the affective states arise from two independent neurophysiological systems. Particularly, the one system relates to valence of affect (pleasure–displeasure) and the other to arousal, or alertness (activation - deactivation).</p> <p>Happy, Delighted, Excited, Astonished, Aroused, Tense, Alarmed, Angry, Afraid, Annoyed, Distressed, Frustrated, Miserable, Sad, Gloomy, Depressed, Bored, Droopy, Tired, Sleepy, Calm, Relaxed, Satisfied, At ease, Content, Serene, Glad, Pleased.</p>	
Caplan, Cobb, French, Van Harrison, and Pinneau	1980	<p><b>Affective strains (negative emotions).</b> Rated on a 4-point Likert scale ranging from <i>Never or a little</i> to <i>Most of the time</i>.</p> <p>13 items</p> <p>Respondents indicated how frequently they felt negative emotions:</p> <p>Including anxiety (e.g., “I feel nervous,”; “I feel jittery”)</p> <p>Depression (e.g., “I feel sad,” “I feel blue”)</p> <p>Irritation (e.g., “I get angry,” “I get irritated or annoyed”)</p>	<p><math>\alpha = .83</math></p> <p>In Lapierre, &amp; Allen (2006)</p>



<b>Affective Dimension: (ii) Emotional Exhaustion</b>			
<b>Author/source</b>	<b>Date</b>	<b>Measures/Items</b>	<b>Cronbach's alpha (if available)</b>
Schaufeli, Leiter, Maslach, & Jackson	1996	<p><b>Emotional exhaustion. Burnout Inventory (from MBI-General Survey).</b> Rated on a 7-point scale ranging from <i>Never</i> to <i>Every day</i>. Instructions: Below you will find a series of statements. Please rate how frequent you experience each statement 5 items</p> <ol style="list-style-type: none"> <li>1. I feel tired when I get up in the morning and have to face another day on the job</li> <li>2. I feel burned out from my work</li> <li>3. I feel used up at the end of the workday</li> <li>4. I feel emotionally drained form my work</li> <li>5. Working all day is really a strain for me</li> </ol>	<p><math>\alpha = .84</math></p> <p>In Windeler, Chudoba, and Sundrup (2017)</p>
Maslach, & Jackson	1981	<p><b>Emotional exhaustion.</b> Rated on a 7-point scale ranging from <i>Never</i> to <i>Every day</i>. Instructions: Think about how you feel about your work. How often do you feel each of the following?' 11 items</p> <ol style="list-style-type: none"> <li>1. I feel emotionally drained from my work</li> <li>2. I feel used up at the end of the workday</li> <li>3. I feel fatigued when I get up in the morning</li> <li>4. and have to face another day on the job</li> <li>5. Working with people all day is really a strain for me</li> <li>6. I feel burned out from my work</li> <li>7. I feel frustrated by my job</li> <li>8. I feel I'm working too hard on my job</li> <li>9. Working with people directly puts too much stress on me</li> <li>10. I feel like I'm at the end of my rope</li> </ol>	<p><math>\alpha = .94</math></p> <p>In Redman et al. (2009)</p>

<b>Affective dimension: (iii) Job Satisfaction</b>			
<b>Author/source</b>	<b>Date</b>	<b>Measures</b>	<b>Cronbach's alpha (if available)</b>
Caillier	2012	<b>Job Satisfaction.</b> Rated on a 5-point Likert scale ranging from <i>Very dissatisfied</i> to <i>Very satisfied</i> . 1 Item Considering everything, how satisfied are you with your job?	
Morganson, Major, Oborn, Verive and Heelan	2010	<b>Job Satisfaction.</b> Rated on a 5point scale ranging from <i>Strongly disagree</i> to <i>Strongly agree</i> . 3 Items: 1. Overall I am satisfied with my job 2. I recommend [name of organisation] to others as a good place to work 3. I am satisfied with my current work schedule	$\alpha = .79$
O'Neill, Hambley, Greidanus, MacDonnell, & Kline	2009	<b>Job Satisfaction.</b> Rated on a 7-point Likert scale. Teleworkers: "Overall, I am satisfied while teleworking" Non-teleworkers: "Overall, I am satisfied with my current job"	
Rutherford et al.	2009	<b>Job satisfaction.</b> Rated on a 5-point Likert scales, ranging from <i>Strongly disagree</i> to <i>Strongly agree</i> 3 Items: How do you feel about your overall experience of your job? 1. Very dissatisfied/very satisfied 2. Very displeased/very pleased 3. Very frustrated/very contented	$\alpha = .73$ In Suh & Lee 2017
Baker, Avery and Crawford,	2006	<b>Job satisfaction.</b> Rated on a 5 - point Likert scale. 5 Items – adjusted from Staples et al. (1999) Two items asked about employees' satisfaction with how they were managed One item asked about their satisfaction with hours of work One item asked about the variety in the job.	$\alpha = .73$

		One item was added to the Staples et al. (1999) asking the degree to which respondents were satisfied with working from home.	
Bono and Judge (Adapted from Brayfield & Rothe, 1951)	2003	<b>Daily job satisfaction.</b> Rated on 5point scale ranging from <i>Strongly disagree</i> to <i>Strongly agree</i> . 5items Sample items: 1. Presently I feel fairly satisfied with my job 2. Today I am enthusiastic about my work	$\alpha = .73$ In Vega, Anderson & Kaplan (2015)
Schneider et al.	2003	<b>Overall Job Satisfaction.</b> Rated on 5-point Likert scale ranging from <i>Very satisfied</i> to <i>Very dissatisfied</i> ; <i>Very good</i> to <i>Very poor</i> . 1. Considering everything how satisfied are you with your job? (VS–VD) 2. Considering everything, how would you rate your overall satisfaction with your company at the present time? (VS–VD) 3. How would you rate this company as a company to work for compared to other companies? (VG–VP)	Used in Kelliher, & Anderson, 2010
Ilozor, Ilozor & Carr	2001	<b>Job satisfaction.</b> Rated on a 5-point (ordinal) scale ranging from <i>Strongly disagree</i> to <i>Strongly agree</i> . 10 Items: 1. Telecommuters not leaving the company even if offered a little higher pay elsewhere 2. Preference for telecommuting against the conventional nine-to-five office attendance 3. Readiness to telecommute till retirement 4. Feeling that work is exciting 5. Perception of output as being of high quality 6. Output appearing to increase progressively 7. Output justifying the input 8. Job stress reducing 9. Work related expenses decreasing 10. Saving more time	

Venkatesh & Vitalari	1992	<b>Job Satisfaction.</b> 7-point Likert-type scale Q1: I am satisfied with my work environment Q2: My work environment allows me to get help from co-workers when needed Q8: My work environment allows me to get help from my supervisors when needed Q12: My work environment allows me to feel as if I belong to the office team	$\alpha = .82$ In Belanger, Webb, Collins & Cheney (2001) retaining Q2, Q8 and Q12
Pond & Geyer	1991	<b>Global Job Satisfaction.</b> Rated on a 7-point scale (see below). 6 items: 1. Knowing what you know now, if you had to decide all over again whether to take the job you now have, what would you decide? 1 (“ <i>definitely not take the job</i> ”) to 7 (“ <i>definitely take the job</i> ”) 2. If a good friend asked if he/she should apply for a job like yours with your employer, what would you recommend? 1 (“ <i>not recommend at all</i> ”) to 7 (“ <i>recommend strongly</i> ”) 3. How does this job compare with your ideal job? 1 (“ <i>very far from ideal</i> ”) to 7 (“ <i>very close to ideal</i> ”) 4. In general, how does your job measure up to the sort of job you wanted when you took it? 1 (“ <i>not at all like I wanted</i> ”) to 7 (“ <i>just like I wanted</i> ”) 5. All things considered, how satisfied are you with your current job? 1 (“ <i>not at all satisfied</i> ”) to 7 (“ <i>completely satisfied</i> ”) 6. In general, how much do you like your job? 1 (“ <i>not at all</i> ”) to 7 (“ <i>a great deal</i> ”)	

Warr, Cook, and Wall	1979	<p><b>Job satisfaction.</b> Rated on a 7-point Likert scale, ranging from <i>Extremely dissatisfied</i> to <i>Extremely satisfied</i>.</p> <p>14 Items</p> <p>Satisfaction with:</p> <ol style="list-style-type: none"> <li>1. The physical work conditions</li> <li>2. The freedom to choose your own method of working</li> <li>3. Your fellow workers</li> <li>4. The recognition you get for good work</li> <li>5. Your immediate boss</li> <li>6. The amount of responsibility you are given</li> <li>7. Your rate of pay</li> <li>8. Your opportunity to use your abilities</li> <li>9. Industrial relations between management and employees in your firm</li> <li>10. Your chance of promotion</li> <li>11. The way your firm is managed</li> <li>12. The attention paid to suggestions you make</li> <li>13. Your hours of work</li> <li>14. The amount of variety in your job</li> <li>15. Your job security</li> </ol>	<p><math>\alpha = .87</math></p> <p>In Troup, &amp; Rose, (2012)</p>
Smith, Kendall, & Hulin	1969	<p><b>Job satisfaction.</b> Job Descriptive Index (JDI). Satisfaction focuses on five facets of the job: (i) the work itself, (ii)supervision, (iii)people /coworkers, (iv) pay, and (v) promotion.</p> <p>The 3-point JDI responses were defined so that a negative response ("yes" to a negative item or "no" to a positive item) was scored 0. A positive response was scored 3, and "I don't know" response ("?") was scored 2.</p>	<p>Work <math>\alpha = .81</math>, Supervision <math>\alpha = .85</math> People <math>\alpha = .90</math> Pay <math>\alpha = .81</math> Promotion <math>\alpha = .91</math></p> <p>In Igbaria &amp; Guimaraes (1999)</p>

<b>Affective dimension: (iii) Organisational commitment</b>			
<b>Author/source</b>	<b>Date</b>	<b>Measures</b>	<b>Cronbach's alpha (if available)</b>
Caillier	2012	<b>Organisational commitment</b> on a 5-point Likert scale ranging from <i>Strongly disagree</i> to <i>Strongly agree</i> . 3 Items 1) I recommend my organization as a good place to work 2) I have a high level of respect for my organization's senior leaders 3) In my organization, leaders generate high levels of motivation and commitment in the workforce	$\alpha = .87$
Harker Martin, & MacDonnell	2012	<i>(Conceptualisation in meta-analysis).</i> <b>Commitment</b> as a multidimensional concept in remote e-working research: 1. Specific types of commitment: a. affective commitment b. normative commitment c. continuance commitment (Desrosiers, 2001; Piper, 2004) 2. Commitment as a general variable defined that is something of a hybrid form of the field (Belanger, 1999; Lee, 2004)	
Meyer and Allen	1997	<b>Affective commitment.</b> Rated on 7-point Likert scale ranging from <i>Strongly disagree</i> to <i>Strongly Agree</i> 8 Items Example item: I really feel as if this organization's problems are my own.	$\alpha = .90$
Cook & Wall	1980	<b>British Organizational Commitment Scale.</b> Rated on a 7-point Likert scale <i>Strongly Agree</i> to <i>Strongly Disagree</i> 9 Items 1. I am quite proud to be able to tell people who it is I work for.	

		<p>2. I sometimes feel like leaving this employment for good.</p> <p>3. I'm not willing to put myself out just to help the organization.</p> <p>4. Even if the firm were not doing too well financially, I would be reluctant to change to another employer.</p> <p>5. I feel myself to be part of the organization.</p> <p>6. In my work I like to feel I am making some effort, not just for myself, but for the organization as well</p> <p>7. The offer of a bit more money with another employer would not seriously make me think of changing my job.</p> <p>8. I would not recommend a close friend to join our staff.</p> <p>9. To know my own work had made a contribution to the good of the organization would please me.</p>	
Mowday, Steers, and Porter (9 - item version: Tett & Meyer, 1993)	1979	<p><b>Organisational commitment.</b> Rated on a 7-point Likert scale</p> <p>Item example:</p> <p>I would accept almost any type of job assignment in order to keep working for this organization'</p>	
Porter, Crampon, & Smith (Abbreviated version)	1976	<p><b>Organizational Commitment Question (OCQ).</b> Rated on a 5-point Likert scale ranging from <i>Strongly disagree</i> to <i>Strongly agree</i>.</p> <p>9 items</p> <p>Used to construct the scale tap two of the three dimensions of commitment included in the longer version of the OCQ:</p> <p>(1) Strong belief in and acceptance of the organization's goals and values</p> <p>(2) Willingness to exert considerable effort on behalf of the organization</p> <p>* The six items reflecting a strong desire to maintain membership in the organization were excluded as they overlapped with the turnover intentions measure. The shorter version of the scale used in the study focused on the affective component of commitment.</p>	<p><math>\alpha = .89</math></p> <p>In Igbaria &amp; Guimaraes (1999)</p>

<b>Cognitive dimension: Cognitive weariness (i.e., concentration and take in new information)</b>			
<b>Author/source</b>	<b>Date</b>	<b>Measures</b>	<b>Cronbach's alpha (if available)</b>
Pejtersen, Kristensen, Borg & Bjorner	2010	<b>Cognitive stress complaints.</b> Second version of Copenhagen Psychosocial Questionnaire (COPSOQII). Rated on a 5-point Likert scale ranging from <i>Almost never</i> to <i>Almost always</i> . 4 Items 1. How often have you had problems concentrating? 2. How often have you found it difficult to think clearly? 3. How often have you had difficulty in taking decisions? 4. How often have you had difficulty with remembering?	$\alpha = .83$ In Vander Elst et al. (2017)
Shirom	1989 2003	Shirom-Melamed Burnout Measure- Cognitive weariness subscale. Rated on a 7-point frequency scale, ranging from 1, <i>Almost never</i> , to 7 <i>Almost always</i> , for the frequency of appearance of each feeling during their work. 5-items 1. My thinking process is slow. 2. I have difficulty concentrating. 3. I feel I am not thinking clearly. 4. I feel I am not focused on my thinking. 5. I have difficulty thinking about complex things.	$\alpha = .89$ In Shirom & Melamed (2006)
Van Horn et al.	2004	<b>Cognitive weariness.</b> Rated on a 7-point Likert scale ranging from <i>A few times a year</i> to <i>Every day</i> . (The scale is concerned with the capacity to take up new information and loss of concentration at work). The full version of the scale is not available. 7 Items Sample item I have I have trouble concentrating	$\alpha = .92$



Vittersø, Akselsen, Evjemo, Julsrud, Yttri, & Bergvik,	2003	<b>Concentration (at home).</b> Rated on a 5-point Likert scale ranging from <i>Strongly agree</i> to <i>Strongly disagree</i> . 3 Items 1. It is easy to concentrate on my job tasks when I work at home 2. It is easy to become distracted when I work at home (R) 3. There is a lot of noise at home (R)	$\alpha = .86$
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<b>Social dimension: Social solation</b>			
<b>Author/source</b>	<b>Date</b>	<b>Measures</b>	<b>Cronbach's alpha (if available)</b>
Sewell & Taskin	2015	( <i>Qualitative</i> ) <b>Social isolation.</b> Individuals felt isolated, 'apart and invisible'	
Morganson, Major, Oborn, Verive, & Heelan	2010	<b>Workplace Inclusion.</b> (Refers to one's sense of belonging to the organisation, which is a concept opposite to isolation). Rated on 5-point scale from <i>Very little</i> to <i>Very much</i> Sample of the 4 items: Think of your primary work location and indicate how much you feel about the following: 1. A sense of belonging to your department/division 2. In the loop with what's going on within your department/ division	$\alpha = .89$
Lal & Dwivedi	2009	( <i>Qualitative</i> ) <b>Social isolation.</b> Explored communication and networks homeworkers built to maintain their social relationships Standard questions about whether they had colleagues with whom they interacted socially and whether the mobile phone was used for this purpose and if so when (in terms of time) and where (in terms of space) such interactions occurred Non-standard questions included asking people claimed to clarify what they meant by stating they were available for social interaction "all the time, and if that included non-work hours. Participants shared information about their mobile usage behaviours / how they used phones for social interaction	
Golden, Veiga, & Dino	2008	<b>Professional Isolation.</b> Rated on a 5-point Likert scale ranging from <i>Rarely</i> to <i>Most of the time</i> . 7 items: 1. I feel left out on activities and meetings that could enhance my career 2. I miss out on opportunities to be mentored 3. I feel out of the loop	$\alpha = .89$

		4. I miss face-to-face contact with co-workers 5. I feel isolated 6. I miss the emotional support of co-workers 7. I miss informal interaction with others.	
Marshall et al.	2007	<b>Workplace isolation</b> <b>Workplace –Isolation with company</b> 1. I am well integrated with the department/ company where I work (R) 2. I am kept in the loop regarding company social events/functions (R) 3. I am part of the company network (R) *4. Upper management knows about my achievements (R) *5. My supervisor communicates my achievements to upper management (R) <b>Workplace Isolation with colleagues</b> 1. I have friends available to me at work (R) 2. I have one or more co-workers available who I talk to about day-to-day problems at work (R) 3. I have co-workers available whom I can depend on when I have a problem (R) 4. I have enough people available at work who I can talk about my job (R) *5. I have people around me at work (R)	$\alpha = .82$ $\alpha = .83$ In Mulki & Jaramillo's (2011) after deleting the items with asterisk which had very low factor loadings
Cooper & Kurland	2002	<i>(Qualitative)</i> <b>Professional Isolation</b> Defined as when remote e-workers miss important organisational rewards, as a result of being out-of-sight and thus out-of-mind. To explore how telecommuting employees experience their work by investigating three primary questions: 1. Does professional isolation impact employee demand for telecommuting? 2. If so, how does this occur? That is, why do employees associate the work form of telecommuting with professional isolation? What are underlying factors? 3. Are there any differences or similarities in how employees in public and private organizations experience telecommuting?	

Social dimension: Social relationships			
Author/source	Date	Measures	Cronbach's alpha (if available)
Collins et al.	2016	(Qualitative) Workplace relationships were explored asking individuals about their expectations from both their office-based colleagues and remote e-workers, as well as their supervisors. The pivotal role of relationships was also emerged from the actual data.	
Richardson & McKenna	2014	(Qualitative) Remote e-workers had to work harder to earn trust.	
Tietze & Nadin	2011	(Qualitative) Exchange relationships with a) employer/colleagues and b) family  3. What effect has homeworking had on the <b>exchange relationships</b> between employees and their employer/colleagues /family?	
Notelaers, Witte, van Veldhoven, & Vermunt,	2007	<b>Social support. Short Inventory to Monitor Psychosocial Hazards.</b> Rated on a five-point Likert scale ranging from <i>Almost never</i> to <i>Almost always</i> 4 Items 1. If necessary, can you ask your colleagues for help.' 2. In your work do you feel appreciated by your colleagues' 3. If necessary can you ask your direct boss for help? 4. In your work, do you feel appreciated by your direct boss?	$\alpha = .74$
Dambrin	2004	(Qualitative) <b>Manager-employee relationship</b> Relationship is looked at four dimensions (based on hierarchy): 1) Coordination: -communication, -team work organisation 2) Division of labour: -autonomy, -responsibility, authority	

		3) Evaluation: -evaluation criteria, evaluation organisation, evaluation consequences 4) Adjustment: -real practices, attitudes towards the superior	
Karasek	1998	<b>Social support.</b> Rated on a 6-point scale, ranging from 1 <i>Strongly disagree</i> to <i>Strongly agree</i> Two subscales: assessing the social support from both the supervisor and colleagues: Sample Items In my job, it is easy to talk to my colleagues My manager is willing to listen to my personal problems	$\alpha = .94$ for co-worker $\alpha = .85$ for managerial In Sardeshmukh, Sharma & Golden, 2012
Graen Uhl-Bien	1995	<b>Leader member exchange (LMX)</b> -assessed from the supervisors' perspective). Rated on a 5-point scale ranging from <i>Never</i> to <i>Always</i> . Sample of 7 items: 1. How well do you think you understand this employees' problem and needs 2. How often would you be willing to 'bail out' this employee?	$\alpha = .76$ In Gajendran, Harrison, & Delaney-Klinger (2014)
Van Veldhoven & Meijman	1994	<b>Supervisor support.</b> Rated on a 5-point Likert scale ranging from <i>Totally disagree</i> to <i>Totally agree</i> . 5 Items Employees are called to answer different statements concerning their supervisors' sympathy, interest, attention and appreciation	$\alpha = .89$ In Brummelhuis, Haar, & van der Lippe (2010)
Albrecht and Halsey's (version)	1991	<b>Co-worker social support.</b> 14-item Item example 1. My co-workers provide me with information and advice to help me solve problems	$\alpha = .95$ In Fay & Kline (2012)

Seers  Used in Golden, 2006b	1989	<p><b>Team-member exchange quality.</b> Rated on a 5-point Likert scale ranging from <i>Strongly agree</i> to <i>Strongly disagree</i></p> <p><b>10 Items</b></p> <p><b>Sample items</b></p> <ol style="list-style-type: none"> <li>1. My co-workers understand my job problems and needs</li> <li>2. Co-workers are quite willing to help finish work that was assigned to me</li> </ol>	
Norton (as adapted in Fay & Kline, 2012)	1983	<p><b>Specific co-worker-relationship quality. Rated on a 5-Likert scale,</b> asking about the quality of the relationship with the co-worker they interacted with the most.</p> <p><b>5-items</b></p> <p>Item example: We have a good relationship.</p>	$\alpha = .94$ In Fay & Kline, (2012)
Graen & Uhl- Blen,	1995	<p><b>Superior – subordinate relationships. Leader-Member exchange quality (LMX7)</b> measure. Rated on a 5-point Likert scale, ranging from <i>None</i> to <i>Very High</i>.</p> <p>Instructions: This questionnaire contains items that ask you to describe your relationship with either your leader or one of your subordinates. For each of the items, indicate the degree to which you think the item is true for you by circling one of the responses that appear below the item.</p> <p><b>7-items</b></p> <ol style="list-style-type: none"> <li>1. Do you know where you stand with your leader (follower) ... [and] do you usually know how satisfied your leader (follower) is with what you do?</li> <li>2. How well does your leader (follower) understand your job problems and needs?</li> <li>3. How well does your leader (follower) recognize your potential?</li> <li>4. Regardless of how much formal authority your leader (follower) has built into his or her position, what are the chances that your leader (follower) would use his or her power to help you solve problems in your work?</li> <li>5. Again, regardless of the amount of formal authority your leader (follower) has, what are the chances that he or she would “bail you out” at his or her expense?</li> <li>6. I have enough confidence in my leader (follower) that I would defend and justify his or her decision if he or she were not present to do so.</li> <li>7. How would you characterize your working relationship with your leader (follower)?</li> </ol>	$\alpha = .92$ In Golden & Veiga (2008)

Downs & Hazen	1977	<p><b>Communication satisfaction questionnaire.</b> 5- point Likert Scale ranging from <i>Very dissatisfied</i> to <i>Very satisfied</i></p> <p>Assessing relationship with supervisor (as a communication satisfaction factor)</p> <p><b>5 Items:</b></p> <ol style="list-style-type: none"> <li>1. Extent to which my supervisor listens and pays attention to me</li> <li>2. Extent to which my supervisor offers guidance for solving job-related problems</li> <li>3. Extent to which my supervisor trusts me;</li> <li>4. Extent to which my supervisor is open to ideas</li> <li>5. Extent to which the amount of supervision given me is about right</li> </ol>	(Used in Akkirman & Harris, 2004)
Churchill, Ford & Walker	1974	<p><b>Satisfaction with supervisor</b></p> <ol style="list-style-type: none"> <li>1. My supervisor really tries to get our ideas about things 0.8589</li> <li>2. My supervisor has always been fair in dealings with me</li> <li>3. My supervisor gives us credit and praise for work well done</li> <li>4. My supervisor lives up to his/her promises</li> </ol>	$\alpha = .93$ In Mulki & Jaramillo's (2011) study
Rubin	1970	<p><b>Co-worker liking.</b> Rated on 5-point Likert scale.</p> <p><b>5-items</b> – Asking how much they liked co-workers that they were often interacting with. Were asked to answer thinking of the co-worker peer with whom they interacted more frequently.</p> <p>Sample Item:</p> <p>I have great confidence in this person's good judgement</p>	$\alpha = .90$ In Fay & Kline, 2011

Professional dimension: Career development/career opportunities			
Author/source	Date	Measures	Cronbach's alpha (if available)
McDonald, Bradley, & Brown	2008	(Qualitative) It was explored how remote e-working affects co-worker's/manager's perceptions of available career opportunities.	
Gould-Williams & Davies	2005	Perception of organizational support for career and training and development. Rated on a 7-point Likert scale ranging from <i>Strongly agreed</i> or <i>Disagreed</i> <b>8 Items</b> <ol style="list-style-type: none"> <li>1. I am provided with sufficient opportunities for training and development</li> <li>2. This department keeps me informed about business issues and about how well it is doing</li> <li>3. There is a clear status difference between management and staff in this department</li> <li>4. Team working is strongly encouraged in our department</li> <li>5. A rigorous selection process is used to select new recruits</li> <li>6. Management involve people when they make decisions that affects them</li> <li>7. I feel my job is secure</li> <li>8. I feel fairly rewarded for the amount of effort I put into my job</li> </ol>	$\alpha = .50$
Baruch	2000	(Qualitative) Career development, and career perceptions were explored.	



Professional dimension: Competencies			
Author/source	Date	Measures	Cronbach's alpha (if available)
Raghuram et al.	2003	<p><b>Self-efficacy</b> (adapted from Sherer et al. 1982). Rated on a 7-point Likert scale ranging from <i>Strongly disagree</i> to <i>Strongly agree</i>.</p> <p>3 Items</p> <p>A sample item was “When telecommuting ... If something looks too complicated, I will not even bother to try it” (reverse scored)</p>	$\alpha = .83$
Baruch	2000	<p>(Qualitative)</p> <p>The profile of a successful remote e-worker was explored. Important qualities to effectively work from home were: self-discipline, self-motivation, ability to work on own, tenacity, good organisation skills. Signs of unfit were: high need for social life and high need for supervision.</p>	
Schaufeli, Leiter, Maslach, & Jackson	1996)	<p><b>Professional efficacy (personal accomplishment)</b> scale of the Maslach Burnout Inventory-General Survey</p> <ol style="list-style-type: none"> <li>1. In my opinion, I am good at my job</li> <li>2. I feel I am making an effective contribution to what this organization does</li> <li>3. I have accomplished many worthwhile things in this job</li> <li>4. I can effectively solve the problems that arise in my work</li> <li>5. At my work, I feel confident that I am effective at getting things done</li> <li>6. I feel exhilarated when I accomplish something at work</li> </ol>	<p>From <math>\alpha = .70</math> to 0.78</p> <p>In Bakker, Demerouti, &amp; Schaufeli (2002)</p>

Professional dimension: Autonomy			
Author/source	Date	Measures	Cronbach's alpha (if available)
Suh & Lee (adopted from Ahuja et al. 2007)	2017	<b>Job autonomy.</b> Rated on a 5-point Likert scale, ranging from <i>Strongly disagree</i> to <i>Strongly agree</i> . 3 Items 1. I control the content of my job 2. I have a lot of freedom to decide how I perform assigned tasks 3. I set my own schedule for completing assigned tasks	$\alpha = .74$
O'Neill, Hambley, Greidanus, MacDonnell & Kline	2009	<b>Job autonomy.</b> Rated on a 7-point Likert. Single item: There is a lot of autonomy (freedom) in doing my job.	
Taskin & Edwards	2007	<i>Qualitative</i> Control and discretion was affected by occupational status. Control may intense to establish employees' presence.	
Kossek et al.	2006	<b>Psychological job control.</b> Rated on a 5-point Likert-type response scale. 3-Items adapted from the Job Diagnostic Survey (Hackman & Oldham, 1980). job autonomy control over how the work is done 1. How much autonomy is on your job? (Very little to Very much) 2. To what extent does your job permit you to decide on your own about how to go about doing the work? (Very little to Very much) 3. The job gives me considerable opportunity for independence and freedom in how I do the work (Very inaccurate to Very accurate). Newly constructed items	$\alpha = .74$

		<p>4. To what extent does your job permit you to decide on your own about WHERE the work is done? (Very little to Very much)</p> <p>5. To what extent does your job permit you to decide about WHEN the work is done? (Very little to Very much)</p> <p>6. I have the freedom to work wherever is best for me—either at home or at work. (Very inaccurate to Very accurate).</p> <p>7. I do not have control over when I work (reverse). (Very inaccurate to Very accurate).</p>	
Dimitrova	2003	<p>(Qualitative)</p> <p><b>Autonomy</b></p> <p>“How is control achieved in telework?”</p> <p>“How does telework impact on autonomy?”</p> <p>“How does work context mediate control and autonomy in telework?”</p> <p>Assessed how much control each employee had on their job (specific work rules, contact with supervisors and performance monitoring)</p>	
Vittersø, Akselsen, Evjemo, Julsrud, Yttri, & Bergvik	2003	<p><b>Control.</b> Rated on a 7-point Likert scales ranging from <i>Strongly Disagree</i> to <i>Strongly agree</i>.</p> <p>3 Items</p> <p>1. How much autonomy do you have in your work?</p> <p>2. How precisely does the following statement characterize the situation in your job: My work gives me possibilities for autonomy and freedom with respect to how to conduct my work</p> <p>3. How precisely does the following statement characterize the situation in your job: The job prevents any possibility of personal initiative or judgement regarding how to do things (R)</p>	$\alpha = .74$
Langfred (Used in Golden & Veiga, 2005)	2000	<p><b>Job discretion- autonomy.</b> Rated on a 5-point Likert scale ranging from <i>Very little</i> to <i>Very much</i>.</p> <p>Four item - examined the degree to which employees had discretion and control in the implementation of assigned work tasks</p> <p><math>\alpha = .74</math></p> <p>(after dropping one item → “number of written rules and procedures pertaining to job”)</p>	

Van Veldhoven & Meijman  <i>(Used in Brummelhuis, Haar, &amp; van der Lippe, 2010)</i>	1994	<b>Autonomy</b> Three item Sample Items: “I can plan activities myself” “I’m involved in decision-making concerning my job” 5-point Likert scale 1=totally disagree – 5 = totally agree a=0.69	
Breaugh	1989	<b>Autonomy</b> 9-item scale, measuring method, work criteria and scheduling of work. Example items Method: I am able to choose the way to go about my job (the procedures to utilise) Work criteria: I have some control over what I am supposed to accomplish (what my supervisor sees as my job objectives) Scheduling of work: My job is such that I can decide when to do particular work activities	$\alpha = .92$ In Sardeshmukh, Sharma & Golden (2012)
Karasek et al.	1981	<b>Job Decision Latitude (two dimensions):</b> -Decision autonomy -Skill utilisation and development (important indicator of job quality) 1. I have opportunities of advancement in my job 2. My job requires a level of skill 3. I have a lot to say about what happens in my job 4. My job requires creativity 5. My job requires abstract knowledge about the ideas behind my job	<i>(used in Chen &amp; McDonald, 2015)</i>
Sims, Szilagyi, & Keller	1976	<b>Perceived Autonomy - Job Characteristics Inventory.</b> Rated on a 5-point Likert scale ranging from <i>Very little</i> to <i>Very much</i> . 6 Items: 1. To what extent are you able to act independently of your supervisor in deciding your place of work? 2. To what extent are you able to define your work location independently of others?	$\alpha = .91$ Used in Gajendran, Harrison, &

		3. How much discretion can you exercise in deciding where you work? 4. How much discretion can you exercise in defining your work schedule? 5. To what extent are you able to act independently of your supervisor in defining your work schedule? 6. To what extent are you able to define your work schedule independently of others?	Delaney-Klinger, 2014
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Psychosomatic well-being			
Author/source	Date	Measures	Cronbach's alpha (if available)
Dirken,  (as used in Van Horn et al. 2004)	1969	23-item scale measuring psychosomatic health complaints. Choosing between 0 = absent, 1 = present. Health complaints included headaches, symptoms of possible cardiovascular problems, and stomach-aches.	$\alpha = .83$
Spector and Jex	1998	<b>Physical Symptoms Inventory, PSI.</b> 5-point Likert scale ranging from <i>Not at all</i> to <i>Every Day</i> 1. An upset stomach or nausea 2. A backache 3. Trouble sleeping 4 Headache 5. Acid indigestion or heartburn 6. Eye strain 7. Diarrhea 8. Stomach cramps (Not menstrual) 9. Constipation 10. Ringing in the ears 11. Loss of appetite 12. Dizziness 13. Tiredness or fatigue	(Used in Lapierre, & Allen, 2006)
Montreuil & Lippel	2003	Qualitative. Occupational health issues were integrated in the interview guidelines and questionnaire with regard to: musculoskeletal problems associated with computer use	

Shirom	1989 2003	<p>Shirom-Melamed Burnout Measure- Physical fatigue subscale. Rated on a 7-point frequency scale, ranging from 1, <i>Almost never</i>, to 7 <i>Almost always</i>, for the frequency of appearance of each feeling during their work.</p> <p>6-items</p> <p>How Do You Feel at Work?</p> <ol style="list-style-type: none"> <li>1. I feel tired</li> <li>2. I have no energy for going to work in the morning</li> <li>3. I feel physically drained</li> <li>4. I feel fed up</li> <li>5. I feel like my “batteries” are “dead”</li> <li>6. I feel burned out</li> </ol>	<p><math>\alpha = .92</math></p> <p>In Shirom &amp; Melamed (2006)</p>
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## Appendix H: Initial list of the E-Work Well-being scale items (109 items) sent to experts for review

Affective Well-being		
<b>1.1. Emotions. Construct definition:</b> Psychological well-being, as defined by Bradburn (1969), derives from a distinction between positive and negative emotions. The balance between them is what indicates individuals' happiness.		
<b>Instructions:</b> Below are a list of different emotions that you may experience when e-working remotely. Please indicate the amount to which remote e-working has made you feel the following emotions in the past 30 days. <i>5point Likert Scale: Almost never – Rarely - Occasionally - Frequently - Very frequently</i>		
	When e-working remotely I feel:	Source of the item
1	Bored	Included in Russel's (1980) circumplex model of emotions, in JAWS's measure (Van Katwyk et al., 2000) and in the interviews
2	Guilty	Included in Russel's (1980) circumplex model of emotions and in the interviews
3	Sad	Included in Russel's (1980) circumplex model of emotions, and in the interviews. It was not included in the in JAWS's measure though since the researchers included the feeling of being depressed instead (Van Katwyk et al., 2000)
4	Angry	Included in Russel's (1980) circumplex model of emotions, in JAWS's measure (Van Katwyk et al., 2000) and in the interviews
5	Frustrated	Included in Russel's (1980) circumplex model of emotions, in JAWS's measure (Van Katwyk et al., 2000) and in the interviews
6	Stressed	Included in Russel's (1980) circumplex model of emotions and in the interviews
7	Lonely	Based solely on the interviews and the literature suggesting that social isolation is linked to remote e-working (e.g., Bailey & Kurland, 2002).
8	At ease	Included in Russel's (1980) circumplex model of emotions, in JAWS's measure (Van Katwyk et al., 2000) and in the interviews



9	Content	Included in Russel's (1980) circumplex model of emotions, in JAWS's measure (Van Katwyk et al., 2000) and in the interviews
10	Relaxed	Included in Russel's (1980) circumplex model of emotions, in JAWS's measure (Van Katwyk et al., 2000) and in the interviews
11	Happy	Included in Russel's (1980) circumplex model of emotions, in JAWS's measure (Van Katwyk et al., 2000) and in the interviews
12	Excited	Included in Russel's (1980) circumplex model of emotions, in JAWS's measure (Van Katwyk et al., 2000) and in the interviews
13	Proud	Included in Russel's (1980) circumplex model of emotions, in JAWS's measure (Van Katwyk et al., 2000) and in the interviews
14	Grateful	Based solely on the interviews and existing literature (e.g., Kossek, Lautsch, & Eaton, 2006).

<b>Affective Well-being</b>		
<b>1.2. Job satisfaction. Construct definition:</b> Job satisfaction refers to pleasant or positive emotions that are tightly linked to individuals' job experiences (Locke, 1976).		
Part 1: Instructions: Below are a number of statements that describe different characteristics of e-work practices. Thinking of the past 30 days, please indicate how much satisfied you are with the following aspects of your work?		
<i>5point Likert Scale: Not at all - To a small extent - To some extent - To a moderate extent – To a large extent</i>		
<b>When e-working remotely, how satisfied are you with the following:</b>		<b>Source of the item</b>
1	Not being constrained into an office or a single place/ location	The links between job satisfaction and remote e-working aspects were influenced by the interviews conducted by the PhD researcher.
2	Determining when you come to the office and when you do not	
3	Balancing your personal and working life	
4	Being in control of your work scheduling	
5	Being flexible in where you are doing your work	
6	Having the space you need to reflect on your work	
7	Resting from long and intense days in the office	
8	Resting from long and intense days of travelling	

<b>Affective Well-being</b>		
1.3. <b>Emotional exhaustion. Construct definition:</b> The key feature of burnout (Bakker, Schaufeli, Sixma, Bosveld, & Van Dierendonck, 2000); which describes the psychological condition where individuals become emotionally exhausted and depersonalized from others, diminishing their personal accomplishment (Maslach & Jackson, 1981).		
Instructions: Below are a number of statements that describe different characteristics of e-work practices. Thinking of the past 30 days, please indicate how much satisfied you are with the following aspects of your work?		
5point Likert Scale: Not at all - To a small extent - To some extent - To a moderate extent – To a large extent		
<b>When e-working remotely, how satisfied are you with the following:</b>		<b>Source of the item</b>
1	I feel emotionally exhausted when I receive too many emails and instant messages from colleagues	<p>"The following items were influenced by Maslach Burnout Inventory-General Survey (the MBI-General Survey; Schaufeli, Leiter, Maslach, &amp; Jackson, 1996) and specific links with remote e-working were made based on the interviews conducted by the lead researcher.</p> <p>Aspects included in MBI General Survey:</p> <ul style="list-style-type: none"> <li>- Emotional exhaustion/drain</li> <li>- Strain</li> <li>- Used up</li> <li>- Fatigued</li> </ul>
2	I feel used up when I am always “switched on” using my electronic devices	
3	I feel fatigued when I am overworked	
4	I feel burned out when people expect me to be constantly available using technology	
5	I feel strained when using information and communication technologies spills into my non working time	
6	I feel overwhelmed when I do not have my colleagues physically next to me to discuss work-related issues	
7	My energy is depleted	
8	I notice a drop in my vitality	

9	I struggle to recover from work when I have the technologies and the facilities to do job tasks remotely easily	- Burned out
10	I struggle to get my energy back after a long day of remote e-working	b) Extra items based on the interviews  Aspects included:  - Overwhelmed  - Exhausted  - Vitality  - Energy depletion  - Get the energy back  - Ability to recover

<b>Affective Well-being</b>		
<b>1.4. Organisational commitment</b> <b>Construct definition:</b> According to Meyer and Allen's (1991, 1997) three dimensional model commitment is how strongly individuals are attached to their organisation. This attachment can be experienced in a psychological way (i.e., affective organisational commitment) a perceived obligation to the organisation (i.e., normative organisational commitment) and an acknowledgement of the consequences in case of withdrawing from it (i.e., continuance organisational commitment).		
Instructions: Please indicate the degree to which you agree with the following:  5point Likert Scale: Strongly Disagree - Disagree – Neither agree nor disagree - Agree - Strongly Agree		
<b>When e-working remotely, how satisfied are you with the following:</b>		<b>Source of the item</b>
1	I feel as if I am part of the organisation	Influenced by Cook and Wall's (1980) item – British Organisation Commitment Scale: "I feel myself to be part of the organization."
2	I am willing to go the extra mile for my organisation	Inspired by the interviews conducted by the lead researcher
3	I feel as though I belong to my organisation as a whole	Inspired by the interviews conducted by the lead researcher
4	I am currently not looking to move to another role	Influenced by Cook and Wall (1980) item: "In my work I like to feel I am making some effort, not just for myself, but for the organization as well"
5	I am currently not looking to move to another role	"Influenced by Cook and Wall's (1980) item – British Organisation Commitment Scale "The offer of a bit more money with another employer would not seriously make me think of changing my job" and the interviews conducted by the lead researcher
6	I find it easy to identify with my organisations' norms and values	Inspired by the interviews conducted by the lead researcher

7	I am proud that I am part of this organisation	Influenced by Cook and Wall, 1980 – British Organisation Commitment Scale: "I am quite proud to be able to tell people who it is I work for" and the interviews conducted by the lead researcher
8	I have a good understanding and participation in the whole	Inspired by the interviews conducted by the lead researcher

<b>2. Cognitive well-being- Cognitive weariness</b>		
<b>2.1. Concentration and take up new information Construct definition:</b> Cognitive weariness as provided by Van Horn et al. (2004) refers to the capacity individuals have to take up new information and the extent to which they lose their concentration at work		
Instructions: Below you are asked to think about how easily you concentrate and take up new information when you are e-working remotely. Please indicate how often you experience what the following statements claim.  5point Likert Scale: Almost never – Rarely - Occasionally - Frequently - Very frequently		
<b>When e-working remotely, how satisfied are you with the following:</b>		<b>Source of the item</b>
1	I find it easy to concentrate on my work activities (R)	Influenced by an item from Van Horn et al. (2004): ‘I have trouble concentrating’
2	I find it easy to take up new information when I am working on a job task (R)	Influenced by Van Horn et al.'s (2004) generic aspect of taking up new information
3	I find it hard to concentrate when I receive too many emails and instant messages from colleagues	Influenced both by existing research (Sherryl & Salvador, 2002; Leonardi et al. 2010) indicating that remote e-workers are prone to interruptions and by the interviews conducted by the lead researcher
4	I struggle to take up new information when I am constantly available to people	Influenced both by existing research (Sherryl & Salvador, 2002; Leonardi et al. 2010) indicating that remote e-workers are prone to interruptions and by the interviews conducted by the lead researcher
5	I find it easy to take up new information when I can choose the right place for the right job task (R)	Influenced both by existing research (Sherryl & Salvador, 2002; Leonardi et al. 2010) indicating that remote e-workers are prone to interruptions and by the interviews conducted by the lead researcher

6	I struggle to concentrate when I am working in locations other than the office	Influenced by the interviews conducted by the lead researcher according to which some people need their office environment to stay focused, because at home they have lots of interruptions
7	I do not let emails and instant messages reduce my concentration (R)	Influenced both by existing research (Sherry1 & Salvador, 2002; Leonardi et al. 2010) indicating that remote e-workers are prone to interruptions and by the interviews conducted by the lead researcher
8	My job makes me feel very tired and weary	Inspired by the interviews conducted by the lead researcher

<b>3. Social Well-being Construct definition:</b> Refers to social relationships that individuals have in their working environment, with colleagues and supervisors		
<b>3.1. Relationships with colleagues</b>		
<p>Instructions: The following items will be asking you to reflect on your relationships with colleagues at work when e-working remotely. Please indicate how much you agree with what the statements claim:</p> <p>5point Likert scale: Strongly Disagree - Disagree – Neither agree nor disagree - Agree - Strongly Agree</p>		
<b>When e-working remotely, how satisfied are you with the following:</b>		<b>Source of the item</b>
1	I find it easy to exchange ideas and connect with my colleagues	Influenced by Karasek's (1998) concept of social support; 'In my job, it is easy to talk to my colleagues'. The idea of connecting with colleagues was a prominent idea taken from the interviews



2	I am happy with the amount of face-to-face contact I have with my colleagues	Inspired by the interviews since employees were found to value the amount of face-to-face they have with their colleagues
3	I am happy with the quality of my social interactions with colleagues	Inspired by the interviews conducted by the lead researcher
4	My colleagues pay attention to my job problems and needs regardless of our location	Inspired by both the interviews conducted by the lead researcher and Seers' (1989) team-member exchange quality measure item: "My co-workers understand my job problems and needs"
5	I have a supportive network of colleagues with whom I can discuss work-related topics	Inspired by the interviews conducted by the lead researcher
6	My colleagues and I have a good communication regardless of where we are located	Inspired by the interviews conducted by the lead researcher and the importance of communicating with colleagues
7	I have good ongoing relationships with my office-based colleagues regardless of the time we spend away from each other	Inspired by the interviews conducted by the lead researcher
8	I do not feel as if there is a barrier between my office-based colleagues and me when we are based in different locations	Inspired by the interviews conducted by the lead researcher and employees saying that being away may occasionally feel like there is a barrier between the office based colleagues and them

<b>3. Social Well-being</b>		
<b>3.1. Relationships with supervisor</b>		
<p>Instructions: The following items will be asking you to think about your relationships with your supervisor at work when e-working remotely. Please indicate how much you agree with what the statements claim:</p> <p>5point Likert Scale: Strongly Disagree - Disagree - Neither agree nor disagree - Agree – Strongly Agree</p>		
<b>When e-working remotely, how satisfied are you with the following:</b>		<b>Source of the item</b>
1	My supervisor understands my problems and needs regardless of whether I am present or not	Inspired by both an item showing interest on employees needs as indicated by Graen, Novak & Sommerkamp, (1982b) : "How does your manager understand your problems and needs" & interviews conducted by the lead researcher
2	My supervisor adequately supports and provides the necessary resources I need to complete my job tasks	Inspired by the interviews conducted by the lead researcher
3	My supervisor clearly communicates what is expected of me	Inspired by the interviews conducted by the lead researcher where employees claimed that they want to know what is expected of them
4	My supervisor appreciates and acknowledges the work that I am doing	Inspired by both an item showing the appreciation of employees' work as indicated by Van Veldhoven & Meijman (1994) the interviews and by the interviews conducted by the lead researcher
5	My supervisor trusts me that I can undertake my job tasks in any location	Inspired by the interviews conducted by the lead researcher according to which trust is crucial when e-working.

6	My supervisor and I have a flexible mode of communication ensuring we have reasonable contact	Inspired by the interviews conducted by the lead researcher as employees want to make sure that they can contact their supervisors when they want
7	My supervisor and I have a good relationship regardless of whether I am physically present or not	A generic item influenced by the interviews conducted by the lead researcher

<b>3.1. Social Isolation</b>		
<b>3.3. Construct definition:</b> Social isolation refers to individuals' perceptions that they do not have sufficient opportunities for social interaction with their colleagues and supervisors, thus having less support from them (Marhsall, et al. 2007).		
<b>When e-working remotely, how satisfied are you with the following:</b>		<b>Source of the item</b>
1	I feel isolated when I am not around my colleagues on a regular basis	Influenced by Golden, Veiga, Dino's (2008) Professional Isolation item: <i>"I feel isolated"</i>
2	I am not included in social activity at work with colleagues	Inspired by the interviews conducted by the lead researcher
3	I feel as if my colleagues are forgetting about me and do not know me well socially	Inspired by the interviews conducted by the lead researcher
4	I feel that my supervisor forgets about me	Inspired by the interviews conducted by the lead researcher
5	I feel I am not always counted as a valuable team member	Inspired by the interviews conducted by the lead researcher
6	I have less opportunities to interact with colleagues than I would like	Influenced <b>both</b> by Golden, Veiga, Dino's (2008) Professional Isolation item: <i>"I miss face-to-face contact with co-workers"</i> and by the interviews conducted by the lead researcher
7	Emails and instant messaging makes me miss face-to-face communication with my colleagues	Inspired by the interviews conducted by the lead researcher
8	I am often sat on my own without having somebody to bounce ideas off	Inspired both by the interviews conducted by the lead researcher and by an item from Morganson, Major, Oborn, Verive & Heelan's (2010) workplace inclusion measure <i>"I have one or more coworkers available who I talk to about day-to-day problems at work (R)"</i>

<b>4. Professional well-being</b>		
<b>4.1. Autonomy. Construct definition:</b> the extent to which a specific job position allows the employee to make decisions independently (Hackman and Oldham, 1976). Autonomy refers to employees' choice of their most preferred method to complete their job tasks, employees' control over the scheduling of their work, and their job's main criteria (Breugh, 1989); as well as the control over their work's location (Gajendran et al.'s (2014).		
<i>Instructions: In the following section you will be asked to indicate how autonomous you feel you are to conduct your job role when e-working remotely. Please state how much you agree with the following statements:</i>		
<i>5point Likert Scale: Strongly Disagree - Disagree - Neither agree nor disagree - Agree – Strongly Agree</i>		
<b>When e-working remotely, how satisfied are you with the following:</b>		<b>Source of the item</b>
1	I feel that I am enabled to work in an autonomous way	A general item regarding autonomy
2	I feel empowered to decide what the best way is to get my job done	Influenced by Breugh's (1989) suggestion that autonomy refers to work method: "I am able to choose the way to go about my job (the procedures to utilise)"
3	I have the ability to negotiate with my supervisor what I am expected to accomplish	Influenced by Breugh's (1989) suggestion that autonomy refers to work criteria: "I have some control over what I am supposed to accomplish (what my supervisor sees as my job objectives)"
4	I have the autonomy to complete my job tasks at any time	Influenced by Breugh's (1989) suggestion that autonomy refers to the ability to schedule work tasks : "My job is such that I can decide when to do particular work activities"

5	I am enabled to prioritise my work tasks	Influenced by Breugh's (1989) suggestion that autonomy refers to the ability to schedule work tasks: "I have some control over the sequencing of my work activities (when I do what"
6	I have the autonomy to decide where to conduct my work activities	Influenced by Gajendran et al.'s (2014) idea that autonomy includes spatial control of work: "How much discretion can you exercise in deciding where you work?"
7	I have the autonomy to decide which is the right job task to do in the right place	Influenced by Gajendran et al.'s (2014) idea that autonomy includes spatial control of work (e.g. "How much discretion can you exercise in deciding where you work?" ) combined with the idea that employees can do the right job task in the right place as it was indicated by the interviews conducted by the lead researcher.

<b>Professional Competence</b>		
<p><b>4.2. Professional Competence Construct definition:</b> Reflects on individuals' (psychological) ability to effectively deal with work-related problems and take respective actions. This concept relates to self-efficacy as suggested by Bandura (1997) and personal accomplishment as suggested by Maslach (1993). In remote e-workers' case, it is assessed the extent to which remote e-workers feel they deal effectively with problems that may arise regardless their work location, by making use of ICT.</p>		
<p><i>Instructions: Below, you are asked to reflect on your levels of competence in your job and the extent to which you think you can successfully achieve tasks, goals and objectives when e-working remotely. Please indicate how frequent you experience what each statement describes:</i></p> <p><i>5point Likert Scale: Almost never – Rarely - Occasionally - Frequently - Very frequently</i></p>		
When e-working remotely, how satisfied are you with the following:		Source of the item
1	Overall, I am competent to do my job	Influenced by an item from the personal accomplishment scale of the Maslach Burnout Inventory-General Survey (Schaufeli, Leiter, Maslach, & Jackson, 1996): <i>"In my opinion, I am good at my job"</i>
2	I am meeting my goals and targets, even when I am not physically next to people from my organisation	Influenced by an item from the personal accomplishment scale of the Maslach Burnout Inventory-General Survey (Schaufeli, Leiter, Maslach, & Jackson, 1996): <i>"At my work, I feel confident that I am effective at getting things"</i>

		<i>done"</i> & Interviews conducted by the lead researcher
3	I resolve work-related issues that may arise by using information and communication technologies (such as emails, calls and instant messages)	Influenced by both an item from the personal accomplishment scale of the Maslach Burnout Inventory-General Survey (Schaufeli, Leiter, Maslach, & Jackson, 1996) <i>"I can effectively solve the problems that arise in my work"</i> & Interviews conducted by the lead researcher
4	I have the essential IT knowledge, skills and abilities to solve any issues while I am not working in an office environment.	Inspired by the interviews where interviewees were called to identify the most essential competencies when e-working
5	I effectively communicate with people even when they are out of my sight	Inspired by the interviews where interviewees were called to identify the most essential competencies when e-working
6	I stay motivated something that helps me to persist towards my goals	Inspired by the interviews where interviewees were called to identify the most essential competencies when e-working
7	I discipline myself to stay focused and get things done	Inspired by the interviews where interviewees were called to identify the most essential competencies when e-working
8	I have a good knowledge of myself and my own capabilities	Inspired by the interviews where interviewees were called to identify the most essential competencies when e-working



4.3. Career Development		
<p><b>Construct definition:</b> refers to individuals' perceptions regarding their career development, something essential to eliminate employees' feelings of professional isolation (Cooper &amp; Kurland, 2002). Career development can be enabled through a) interpersonal networking, b) informal learning, c) mentoring and d) sufficient opportunities.</p>		
<p><i>Instructions: Below you are asked to reflect on your career development and progression within your organisation (including rewards, training and promotion). The following statements ask you to think about the degree to which you can access professional development activities that you value as important for your professional advancement when e-working remotely. Please indicate how much you agree with the following statements:</i></p> <p><i>5point Likert Scale: Strongly Disagree - Disagree - Neither agree nor disagree - Agree – Strongly Agree</i></p>		
When e-working remotely, how satisfied are you with the following:		Source of the item
1	I get to meet the people who influence my career	Influenced by Cooper and Kurland's (2002) qualitative study and the idea that sufficient network is crucial for career development
2	I make myself visible to the right people in the organisation in order to be promoted	Influenced by Cooper and Kurland's (2002) qualitative study and the idea that sufficient network is crucial for career development
3	I get sufficient mentoring from my supervisor	Influenced by Cooper and Kurland's (2002) qualitative study and the idea that mentoring is crucial for career development
4	My supervisor provides me with constructive feedback that I need to develop professionally	Influenced by Cooper and Kurland's (2002) qualitative study and the idea that mentoring is crucial for career development

5	I feel that I am missing relevant information that may enhance my work-related skills (R)	Influenced by Cooper and Kurland's (2002) qualitative study and the idea that informal learning is crucial for career development
6	I feel that I am not receiving important information that can support me in my professional tasks and advancement (R)	Influenced by Cooper and Kurland's (2002) qualitative study and the idea that informal learning is crucial for career development
7	I feel that I am receiving all the relevant information about career progression	Inspired by the interviews according to which employees want to be informed about and included in career opportunities for their career development
8	I feel that I can easily be forgotten regarding career opportunities that come up in my organisation(R)	Inspired by the interviews according to which employees want to be informed about and included in career opportunities for their career development
9	My organisation is very good in terms of understanding people working out of offices and offering them career opportunities	Inspired by the interviews according to which employees want to be informed about and included in career opportunities for their career development
10	I am less visible in a way that when new opportunities are coming up my organisation wouldn't immediately think of me (R)	Inspired by the interviews according to which employees want to be informed about and included in career opportunities for their career development

<b>5. Psychosomatic wellbeing</b>		
<b>Construct definition:</b> refers to a variety of physical health complaints and symptoms such as headaches and musculoskeletal problems (such as back pains) that individuals may experience (Dirken 1969; Van Horn et al., 2004).		
<i>Instructions: In this section please spare some time to think about your physical conditions the days that you are remotely e-working. Considering the last 30 days please indicate the extent to which you experience what the following items describe:</i>  <i>5point Likert Scale: Almost never – Rarely - Occasionally - Frequently - Very frequently</i>		
<b>When e-working remotely, how satisfied are you with the following:</b>		<b>Source of the item</b>
1	My muscles felt stiff	Influenced by the interviews conducted by the lead researcher
2	I have suffered from <b>shoulder pains</b>	Symptom mentioned in the Eurofound and the International Labour Office's (2017) report, in Hildebrandt and Douwes's scale (1991) and the interviews conducted by the lead researcher
3	I suffered from pain in my <b>lower limbs</b> such as feet, thighs and hips	Symptom mentioned in the Eurofound and the International Labour Office's (2017) report, in Hildebrandt and Douwes's scale (1991) and the interviews conducted by the lead researcher
4	I had <b>pain in the upper body</b> such as forearms and elbows	Symptom mentioned in the Eurofound and the International Labour Office's (2017) report, in Hildebrandt and Douwes's scale (1991) and the interviews conducted by the lead researcher
5	My <b>joints</b> felt sore	Symptom mentioned in the Eurofound and the International Labour Office's (2017) report and the interviews conducted by the lead researcher

6	I experienced <b>neck pains</b>	Symptom mentioned in the Eurofound and the International Labour Office's (2017) report, in Hildebrandt and Douwes's scale (1991) and the interviews conducted by the lead researcher
7	I experienced <b>back pain</b>	Symptom mentioned in the Eurofound and the International Labour Office's (2017) report, in Hildebrandt and Douwes's scale (1991), in the Physical Symptoms Inventory by Spector and Jex (1997) and the interviews conducted by the lead researcher
8	I experienced <b>tendon pain</b> in the <b>wrists</b> and <b>fingers</b>	Symptom mentioned in the Eurofound and the International Labour Office's (2017) report and the interviews conducted by the lead researcher
9	I experienced <b>discomfort in my eyes</b> (e.g., sore, tired or dry eyes)	Symptom mentioned in the Eurofound and the International Labour Office's (2017) report and the interviews conducted by the lead researcher
10	I had problems with my <b>sleep</b>	Symptom included in the European Commission's report (2010), in the Physical Symptoms Inventory by Spector and Jex (1997).
11	I felt very tired and/or <b>fatigued</b>	Symptom mentioned in the interviews conducted by the lead researcher and in the Physical Symptoms Inventory by Spector and Jex (1997).
12	I had constant <b>headaches</b> and/or <b>migraines</b>	Symptom included in the Eurofound and the International Labour Office's (2017) report, in the Physical Symptoms Inventory by Spector and Jex (1997) and the interviews conducted by the lead researcher
13	<b>Overall</b> , I have experienced physical health issues	Generic item

**Appendix I: E-Work Well-being scale 74-item version. Revised based on experts' feedback and used in the pilot study.**

<p><b>(a) Affective well-being dimension:</b>  <b><i>Emotions:</i></b></p> <p>Instructions: "Below are a list of different emotions that you may experience when e-working remotely. Please indicate the amount to which remote e-working has made you feel the following emotions recently".</p> <p>(5point Likert Scale: Never – Rarely - Occasionally - Frequently - Very frequently)</p> <p>When e-working remotely I feel:</p> <table border="1"> <tr><td>1. Bored</td></tr> <tr><td>2. Happy</td></tr> <tr><td>3. Sad</td></tr> <tr><td>4. Proud</td></tr> <tr><td>5. Frustrated</td></tr> <tr><td>6. Relaxed</td></tr> <tr><td>7. Lonely</td></tr> <tr><td>8. At ease</td></tr> <tr><td>9. Stressed</td></tr> <tr><td>10. Grateful</td></tr> <tr><td>11. Guilty</td></tr> </table> <p>Instructions: "Below are a number of statements that describe different characteristics of e-work practices. Thinking of the past 30 days, please indicate how much satisfied you are with the following aspects of your work?"</p> <p>(5point Likert Scale: Not at all - To a small extent - To some extent - To a moderate extent – To a large extent)</p> <p>"When e-working remotely, how satisfied are you with the following:"</p> <table border="1"> <tr><td>1. Not being confined into an office or a single place/ location</td></tr> <tr><td>2. Determining when you come to the office and when you do not</td></tr> <tr><td>3. Balancing your personal and working life</td></tr> <tr><td>4. Having the peace to reflect on your work</td></tr> </table> <p><b><i>Emotional exhaustion</i></b></p> <p>Instructions: "There are situation at work that may be difficult and challenging. May you please indicate how frequently you have currently experienced what each of the following statements describes"?</p> <p>(5point Likert Scale: Never – Rarely - Occasionally - Frequently - Very frequently)</p> <p>When e-working remotely:</p>	1. Bored	2. Happy	3. Sad	4. Proud	5. Frustrated	6. Relaxed	7. Lonely	8. At ease	9. Stressed	10. Grateful	11. Guilty	1. Not being confined into an office or a single place/ location	2. Determining when you come to the office and when you do not	3. Balancing your personal and working life	4. Having the peace to reflect on your work
1. Bored															
2. Happy															
3. Sad															
4. Proud															
5. Frustrated															
6. Relaxed															
7. Lonely															
8. At ease															
9. Stressed															
10. Grateful															
11. Guilty															
1. Not being confined into an office or a single place/ location															
2. Determining when you come to the office and when you do not															
3. Balancing your personal and working life															
4. Having the peace to reflect on your work															

1. I feel emotionally exhausted when I receive too many emails and instant messages from colleagues
2. I feel used up when I always have my devices switched on
3. I feel fatigued when I am overworking
4. I feel burned out when people expect me to be constantly available using technology
5. I feel strained when my use of information and communication technologies takes time away from my personal life
6. I struggle to get my energy back after a long day of remote e-working
<p><b><i>Organisational commitment</i></b></p> <p>Instructions: “Below you are asked to indicate how committed you are to your organisation at the moment. Commitment refers to how strongly attached you are to your organisation, how much your values are aligned and whether you are keen on going the extra mile for them.</p> <p>Please indicate the degree to which you agree with the following:</p> <p>(5point Likert Scale: Strongly Disagree - Disagree – Neither agree nor disagree - Agree - Strongly Agree")</p> <p>When e-working remotely:</p>
1. I feel as if I am part of the organisation
2. I am willing to go the extra mile for my organisation
3. I want to put significant effort on behalf of my organisation
4. I find it easy to identify with my organisations’ norms and values
5. I am proud that I am part of this organisation
<p><b><i>Cognitive well-being dimension - Cognitive weariness</i></b></p> <p>Instructions: “Below you are asked to think about how easily you concentrate and take up new information when you are e-working remotely. Please indicate how often you experience what the following statements describe”.</p> <p>5point Likert Scale: Never – Rarely - Occasionally - Frequently - Very frequently</p> <p>When I e-work remotely:</p>
1. I find it easy to concentrate on my work activities (R)
2. I find it hard to concentrate when I receive too many emails and instant messages from colleagues
3. I find it easy to take in new information when I am working on a job task (R)
4. I struggle to concentrate when I am working in locations other than the office
5. I do not let emails and instant messages reduce my concentration (R)
<p><b><i>(b) Social well-being dimension – Relationships with colleagues</i></b></p> <p>Instructions: “The following items will be asking you to reflect on your relationships with colleagues at work when e-working remotely. Please indicate how much you agree with what the following statements claim”:</p>

<p>(5point Likert scale: Strongly Disagree - Disagree – Neither agree nor disagree - Agree - Strongly Agree)</p> <p>When e-working remotely:</p>
1. I find it easy to exchange ideas and connect with my colleagues
2. I am happy with the amount of face-to-face contact I have with my colleagues
3. I am happy with the quality of my social interactions with colleagues
4. My colleagues pay attention to my job problems and needs regardless of our location
5. My colleagues and I have a good communication regardless of where we are located
6. I have good relationships with my office-based colleagues regardless of the time we spend away from each other
<p><b><i>Relationships with supervisor:</i></b></p> <p>Instructions: “The following items will be asking you to think about your relationships with your supervisor at work when e-working remotely. Please indicate how much you agree with what the statements claim”:</p> <p>(5point Likert Scale: Strongly Disagree - Disagree - Neither agree nor disagree - Agree – Strongly Agree)</p> <p>When e-working remotely:</p>
1. My supervisor understands my problems and needs regardless of whether I am physically present or not
2. My supervisor clearly communicates what is expected of me
3. My supervisor appreciates and acknowledges the work that I am doing
4. My supervisor trusts me to undertake my job tasks in any location
5. My supervisor and I have a good relationship regardless of whether I am physically present or not
<p><b><i>Social Isolation:</i></b></p> <p>Instructions: “Being a remote e-worker may involve working in solitude, away from colleagues and supervisors. The items below ask you to indicate how this experience may influence the degree you feel included in your organisation and working social networks. Please indicate how frequent you experience what each of the following statements describe”:</p> <p>(5point Likert scale: Never – Rarely - Occasionally - Frequently - Very frequently)</p> <p>When e-working remotely:</p>
1. I feel isolated when I am not around my colleagues on a regular basis
2. I am not included in social activity at work with colleagues
3. I feel I am not always counted as a valuable team member
4. I have fewer opportunities to interact with colleagues than I would like
5. I feel I do not have somebody to bounce ideas off

**(c) Professional well-being dimension**

***Autonomy***

Instructions: “In the following section you will be asked to indicate how autonomous you feel you are to conduct your job role when e-working remotely. Please state how much you agree with the following statements”:

(5point Likert Scale: Strongly Disagree - Disagree - Neither agree nor disagree - Agree – Strongly Agree)

When e-working remotely:

1. I feel empowered to decide what the best way is to get my job done
2. I have the ability to negotiate with my supervisor what I am expected to accomplish
3. I have the autonomy to complete my job tasks at any time
4. I am enabled to prioritise my work tasks
5. I have the autonomy to decide where to conduct my work activities

***Competence***

Instructions: “Below, you are asked to reflect on your levels of competence in your job and the extent to which you think you can successfully achieve tasks, goals and objectives when e-working remotely. Please indicate how frequent you experience what each statement describes”:

(5point Likert Scale: Never – Rarely - Occasionally - Frequently - Very frequently)

When e-working remotely:

1. Overall, I am competent to do my job
2. I am meeting my goals and targets, even when I am not physically with people from my organisation
3. I resolve work-related issues that may arise by using information and communication technologies (such as emails, calls and instant messages)
4. I have the essential IT knowledge, skills and abilities to solve any issues while I am not working in an office environment.
5. I effectively communicate with people using information and communication technologies

***Career development***

Instructions: “Below you are asked to reflect on your career development and progression within your organisation (including rewards, training and promotion). The following statements ask you to think about the degree to which you can access professional development activities that you value as important for your professional advancement when e-working remotely. Please indicate how much you agree with the following statements”:



(5point Likert Scale: Strongly Disagree - Disagree - Neither agree nor disagree - Agree – Strongly Agree)
When e-working remotely:
1. I make myself visible to the right people in the organisation in order to be promoted
2. My supervisor provides me with constructive feedback that I need to develop professionally
3. I feel that I am missing relevant information that may enhance my work-related skills (R)
4. I feel that I can easily be forgotten regarding career opportunities that come up in my organisation(R)
5. My organisation understands that people working remotely need adequate career opportunities
<b>(d) Physical well-being dimension</b> <b>Physical conditions</b>  Instructions: “In this section please spare some time to think about the amount of time that you spend using an electronic device for work purposes (e.g., computer, tablet and mobile phone) when e-working. Considering the last 30 days please indicate any influence that this had on your physical conditions mentioned below”:  (5point Likert Scale: Never – Rarely - Occasionally - Frequently - Very frequently)  When e-working remotely:
1. I felt my body becoming very stiff
2. I have suffered from shoulder pains
3. I suffered from pain in my lower limbs such as feet, thighs and hips
4. I had pain in the upper body such as forearms and elbows
5. My joints felt sore
6. I experienced neck pains
7. I experienced back pain
8. I experienced tendon pain in the wrists and fingers
9. I experienced discomfort in my eyes (e.g., sore, tired or dry eyes)
10. I had problems with my sleep
11. I felt very tired and/or fatigued
12. I had constant headaches and/or migraines

**Appendix J: Certificate of Ethical approval and accompanied documents (Participant Information sheet, Consent form and Debriefing statement, and Gatekeeper permission) for the Pilot study**



**Certificate of Ethical Approval**

Applicant:

Maria Charalampous

Project Title:

Assessing remote e-workers' well-being at work: A scale development

This is to certify that the above named applicant has completed the Coventry University Ethical Approval process and their project has been confirmed and approved as Medium Risk

Date of approval:

04 October 2017

Project Reference Number:

P52571

**Participant Information Sheet**  
Faculty of Health and Life Sciences



**Study Title:** Assessing remote e-workers' well-being at work: A scale development

My name is Maria Charalampous. I am a PhD Psychology researcher at Coventry University and I am carrying out this research for my thesis. You are being invited to take part in the research study about remote e-workers' work-related well-being. Before you decide whether to participate please take time to read the following information and understand why the research is being done and what it will involve.

**What is the purpose of the study?**

The purpose of the study is to explore whether remote e-working, which is working away from the traditional office, can relate to your well-being at work. Specifically we will be examining whether spending at least a portion of your working time away from your head office (no matter if this is home, another site of the company, hotel or train) making use of technology to stay connected to your workplace can link to your work related thoughts and feelings at work.

**Why have I been invited to take part in the study?**

You have been invited to take part in this study as you are an employee (above the age of 18) who spends a portion of your working time away from your company's head office.

**Do I have to take part?**

There is no obligation to take part - it is entirely voluntary. If you decide to participate you are free to withdraw from the study at any given time in the two weeks following the completion of the online survey, without giving a reason. You can withdraw by contacting the PhD researcher on email and providing her with your participant information number. If you decide to withdraw all your data will be destroyed and will not be used in the study. There are no consequences to deciding that you no longer wish to participate in the study.

**What will happen to me if I take part?**

If you agree to participate in this study you will firstly be asked to tick a box to signal your consent before answering the online survey. Completing the online survey should approximately take you 30 minutes.

Initially, you will be asked to answer some general demographic questions about yourself such as your age, gender, and work status. Then you will be provided with some statements and you will be asked to rate how much you agree with them, or how often you experience what they describe. Please note that, some of statements are explicitly focusing on days you are e-working and some others on your general working experience.

**What are the possible benefits of taking part?**

Upon completion, you will be provided with a link to be entered into a prize draw to win one, out of four, £25 Amazon vouchers.

The current survey will encourage you to reflect on your work experiences when working remotely. The information we get from this study could help both researchers

and organisations to understand how working remotely experiences can link to well-being in the workplace. You can also request a final report of the study's main findings.

**What are the possible disadvantages and risks of taking part?**

As part of the study involves discussing about your personal experiences and feelings when e-working there is a slight risk that this could raise some anxieties or concerns; although we strongly believe that this is very unlikely. If you find that this happens, please be aware that you are under no obligation to carry on with the survey.

**What if something goes wrong?**

We do not envisage anything that will go wrong, however if participating in this study raises any issues for you, or if you have concerns about your health, we recommend that you contact your GP or a Health professional. You can also seek emotional support from Samaritans ([www.samaritans.org](http://www.samaritans.org)). Samaritans is a registered charity in the UK that aims at providing emotional support to anyone in emotional distress through their telephone helpline (08457 90 90 90) or email address ([jo@samaritans.org](mailto:jo@samaritans.org)).

**Will my taking part in the study be kept confidential?**

Yes. The confidentiality of your responses is guaranteed by the researcher. All of the information you give will remain anonymous so that those reading any produced reports from the research will not know who has contributed to it or what your responses were. Your personal data will be handled in accordance with the UK Data Protection Act 1998 so that unauthorised individuals will not have access to it.

**What will happen to the results of the research study?**

The results of the study will be written up in a thesis report that will be made publicly available in the University's online repository. Findings may also be published in a journal article or might be used in future reports, articles or presentations by the researchers. No individual participants will be identifiable in these reports. If you wish to receive a summary of the findings once the study is completed or if you would like to take part in future studies, please contact the PhD researcher via email; her email address will be available at the end of the debrief.

Moreover, your individual answers will not be shared with your employers, managers or supervisors. However, it worth mentioning that your company may receive a report which will summarise the general findings of the study, in order to help your company decide what needs to be amended to improve your e-working experience.

**Who is organising and funding the study?**

The study is being run by Maria Charalampous, supervised by Dr Christine Grant and Dr Carlo Tramontano at Coventry University. This study is funded by Coventry University.

**Who has reviewed the study?**

The study has been reviewed and has received a favourable ethical opinion from the Coventry University's Research Ethics Committee.

**Who should I contact if I have a question or concerns about this research?**

Thank you for taking time to participate to my survey. Please do not hesitate to contact me if you have any queries at any point. In case of complaint you could contact any

member of the supervisory team. If the complaint goes unaddressed, that should be addressed to Professor Olivier Sparagano. Contact details are provided below.

Content removed on data protection grounds

**Thank you for taking time to read this information sheet, please do not hesitate to contact us if you have any further questions**

## Consent Statement

Faculty of Health and Life Sciences



**Participant Reference Code:** \_\_\_\_\_

- I voluntarily agree to take part in the “Assessing remote e-workers’ well-being at work: A scale development study”.
- I have read and understood the Information Sheet provided. I have been given a full explanation of the nature, purpose, and likely duration of the study, and of what I will be expected to do. I have been advised about any possible anxieties or concerns, which may result.
- I consent to my personal data, as outlined in the accompanying information sheet, being used for this study (e.g., being anonymously used in conferences and journal articles). I understand that all personal data is held and processed in the strictest confidence, and in accordance with the Data Protection Act (1998).
- I understand that I am free to withdraw from the study at any time in the two weeks following the completion of the online survey without giving a reason.
- I confirm that I have read and understood the above and freely consent to participating in this study. I have been given adequate time to consider my participation and agree to comply with the instructions and restrictions of the study.

Do you consent to participate in this research project?

☐ I consent

☐ I do not consent

**Providing email to enter the prize draw (once the survey is completed)**

If you would like to enter the prize draw for £25 vouchers from Amazon, please add your email below:

## **Debriefing Statement:**

### **Assessing remote e-workers' well-being at work: A scale development** Faculty of Health and Life Sciences



You have just been asked to share your experiences when e-working remotely, away from your main company's office, at least partly of your total working hours. These experiences were linked to your well-being in the workplace.

By participating in the current study, you helped the research team to gain a greater understanding of how remote e-working links to e-workers' well-being at work. Research has suggested that employees, who are not working constantly in an office location, using technology to connect to their colleagues, are both benefited and challenged. For example, they may be more satisfied with their job because they have more flexibility and control around their job tasks but they may sometimes feel isolated from the rest of their colleagues. Since well-being at work was suggested to be a multi-dimensional phenomenon, different spheres of employees' lives have been explored: affective, professional, social, cognitive, and the physical. Part of the online survey consists of a new scale developed by the researchers aiming at assessing e-workers' well-being at work. This is an innovative piece of research because to date, organisations do not have any developed tools to monitor remote e-workers' well-being at work.

Following the completion of the research, the findings can be made available to you on request. Please do not hesitate to contact me if you have any queries at any point. In case of complaint you could contact any member of the supervisory team. If the complaint goes unaddressed, that should be addressed to Professor Olivier Sparagano. Contact details are provided below.

Content removed on data protection grounds

We have tried to ensure that the questions in this study do not cause any distress. However, it is not uncommon to experience some anxieties or concerns when reflecting

on your personal experiences - support is available. If participating in this study raises any concerns about your health, we recommend that you contact your GP or a Health professional. You can also seek emotional support from Samaritans ([www.samaritans.org](http://www.samaritans.org)). Samaritans is a registered charity in the UK that aims at providing emotional support to anyone in emotional distress through their telephone helpline (08457 90 90 90) or email address ([jo@samaritans.org](mailto:jo@samaritans.org)).

*For further reading on this area:*

Allen, T. D., Golden, T. D., & Shockley, K. M. (2015). How effective is telecommuting? Assessing the status of our scientific findings. *Psychological Science in the Public Interest*, 16(2), 40-68.

Grant, C. A., Wallace, L. M., & Spurgeon, P. C. (2013). An exploration of the psychological factors affecting remote e-worker's job effectiveness, well-being and work-life balance. *Employee Relations*, 35(5), 527-546.

**Thank you for your participation in this research. Your help is much appreciated! Please feel free to contact the researchers regarding any thoughts or issues about the nature of this study or to further discuss your remote e-working experiences.**



### **Gatekeeper permission letter**

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## **Appendix K: Pilot study online survey**

### **Demographics**

1. Age (In years)
2. Gender (1= female, 2 = male)
3. What is your marital status?" (1= Single, 2= Married, 3= Divorced, 4= Widowed, 5= Cohabiting)
4. Do you have any dependent children, under the age of 18?" (1 = yes, 2 = no)
  - 4.1.If yes, how many
5. Which of the following best describes your current occupation?
  - Accounting, banking and finance
  - Business, consulting and management
  - Charity and voluntary work
  - Creative arts and design
  - Energy and utilities
  - Engineering and manufacturing
  - Environment and agriculture
  - Healthcare
  - Hospitality
  - Information technology
  - Law
  - Leisure, sport and tourism
  - Marketing, advertising and PR
  - Media and publishing
  - Property and construction
  - Recruitment and HR
  - Research/Science
  - Retail
  - Sales
  - Social care
  - Teaching and education
  - Transport and logistics
  - Other (please specify)
6. Work status: "Please select from the list below the basis on which you are employed:"
  1. Part-time
  2. Full-time
  3. Self-employed
  4. Part-time student
  5. Full-time student
7. "Do you ever work extra hours, above 'normal' time?" (1= yes, 2= no).

- 7.1. "If yes, please give an approximation of hours per week that you work extra." (In hours)
8. "Please indicate your job level in your organisation (1 = senior management, 2 = middle-level management, 3 = first-level management, and 4 = non-management)"
9. Organisational tenure: "How long have you been working: (a) for your current organization ..... (b) overall ....."
10. Work – related ICT use frequency during working and non-working time:  
"Considering the technology you use for work purposes (e.g., sending emails, instant messages etc)"
- (a) "How often do you use technology **during** 'normal' working hours?"
- (b) "How often do you use technology **outside** 'normal' working hours (e.g., evenings, weekends, and annual leave)?"
- (1 = Never, 2 = Rarely, 3 = Occasionally, 4 = Frequently, 5- Very frequently /all the time)
11. "How many **hours** per week do you, approximately, spend driving for work-related purposes?"
12. "How many **hours** per week do you, approximately, spend commuting by public transport for work-related purposes?"

#### **Regarding e-working:**

Instructions: "The next questions are related to your ability to e-work remotely. For the purposes of this study, remote e-working is defined as "the ability to conduct any part of your work outside your head office location (i.e., working from home, hotels, trains, cafes), at any given time, by making use of technology to stay connected to your working environment"

13. "How long have you been e-working remotely":  
(a) For your current organization..... (b) Overall .....
14. E-working intensity: "How many **hours** do you approximately e-work remotely per week?"
15. Primary work location "Please indicate an approximation of hours per week that you spend working in the following locations. In cases where you find it hard to estimate because of a variety in your work schedules, please provide an approximation of hours, for a typical week".  
(1 = main office location, 2 = employee's home, 3 = a satellite office, 4= a client site, 5 = public transport, 6 = other, please specify location (such as cafes or hotels)
16. Turnover Intentions: How much would you agree with the statement: "I am currently not looking to move to another role" (1=Strongly disagree – 2= Disagree – 3= Neutral – 4= Agree – 5= Strongly agree).

17. Sickness absence: “How many **days**, approximately, have you been off work for health reasons the last 12 months?”

18. Social support in the workplace:

“Please indicate the extent to which you agree or disagree with each statement”

(1=Strongly disagree – 2= Disagree – 3= Neutral – 4= Agree – 5= Strongly agree).

1. I am getting on well with my co-workers
2. There is a pleasant atmosphere at my workplace
3. There is a good cohesion at the workplace
4. There are often conflicts and arguments at work

## **Measures**

### **1. E-Work Well-being measure (74-item version)**

### **2. The Short Warwick-Edinburgh Mental Well-being Scale (SWEMWBS)**

Instructions “Below are some statements about feelings and thoughts. Please tick the box that best describes your experience of each over the last 2 weeks”

(5-point Likert scale) None of the time/ Rarely / Some of the time / Often / All of the time

1. I’ve been feeling optimistic about the future
2. I’ve been feeling useful
3. I’ve been feeling relaxed
4. I’ve been dealing with problems well
5. I’ve been thinking clearly
6. I’ve been feeling close to other people
7. I’ve been able to make up my own mind about things

### **1. Psychological distress**

Instructions: “During the last 30 days, about how often did ...”

(5-point Likert scale: None of the time/ Rarely / Some of the time / Often / All of the time)

- 1) ... you feel so depressed that nothing could cheer you up?
- 2) ... you feel hopeless
- 3) ... you feel restless or fidgety?
- 4) ... you feel that everything was an effort?
- 5) ... you feel worthless?
- 6) ... you feel nervous?

## **2. Sleeping problems:**

**Instructions:** “For each question, please CIRCLE the number that best describes your answer.

Please rate the CURRENT (i.e. LAST 2 WEEKS) SEVERITY of your insomnia problem(s).”

(5-point scale: None, Mild, Moderate, Severe, Very Severe)

1. Difficulty falling asleep:
2. Difficulty staying asleep:
3. Problem waking up too early:

(5point scale: Very Satisfied Satisfied Moderately Satisfied Dissatisfied Very Dissatisfied)

4. How SATISFIED/DISSATISFIED are you with your CURRENT sleep pattern?

(5point scale: Not at all Noticeable, A Little, Somewhat Much, Very Much Noticeable)

5. How NOTICEABLE to others do you think your sleep problem is in terms of impairing the quality of your life?

(5point scale: Not at all Worried A Little Somewhat Much Very Much Worried)

6. How WORRIED/DISTRESSED are you about your current sleep problem?

5point scale: Not at all Interfering A Little Somewhat Much Very Much Interfering

7. To what extent do you consider your sleep problem to INTERFERE with your daily functioning (e.g. daytime fatigue, mood, ability to function at work/daily chores, concentration, memory, mood, etc.) CURRENTLY?

## **3. Work-related rumination Questionnaire (WRPQ)**

Instructions: “Please indicate on a 5-point scale how frequent you engage in each of the different type of ruminative thoughts”:

(Five point Likert scale: 1 = very seldom or never, 2 = seldom, 3 = sometimes, 4 = often, 5 = very often or always)

### **Detachment**

1. Do you feel unable to switch off from work?
2. I am able to stop thinking about work-related issues in my free time
3. Do you find it easy to unwind after work?
4. I make myself switch off from work as soon as I leave
5. Do you leave work issues behind when you leave work?

#### **4. Health and safety issues – Ergonomics**

Instructions: “In the following section you are asked to think about the health and safety issues of the places that you are conducting your work, outside your head office environment. Health and safety issues refer to comfortable conditions in your working environment (e.g. sitting correctly) and focus on the use of the right equipment in order to avoid getting hurt when working. Please indicate how much you agree with the following statements:”

(5point Likert Scale: Strongly Disagree - Disagree - Neither agree nor disagree - Agree – Strongly Agree)

While I am remotely e-working:

1. I do not pay attention to health and safety issues while doing my job tasks
2. My organisation does not consider health and safety issues of the location(s) I am working at
3. I have not received any training and/or guidelines and tips on health and safety issues for remote workstations
4. I do not use a chair with proper lumbar support
5. I do not have a properly designed desk
6. My working environment does not enable me to have a proper sitting posture

#### **5. General Self-efficacy**

Instructions: “Thinking of your daily work, how much would you agree with what the following statements describe?”

(5-point Likert scale: 1 = strongly disagree, 5 = strongly agree)

1. I can always manage to solve difficult problems if I try hard enough.
2. If someone opposes me, I can find the means and ways to get what I want.
3. It is easy for me to stick to my aims and accomplish my goals.
4. I am confident that I could deal efficiently with unexpected events.
5. Thanks to my resourcefulness, I know how to handle unforeseen situations.
6. I can solve most problems if I invest the necessary effort.
7. I can remain calm when facing difficulties because I can rely on my coping abilities.
8. When I am confronted with a problem, I can usually find several solutions.
9. If I am in trouble, I can usually think of a solution.
10. I can usually handle whatever comes my way.

## Appendix L: Health and safety issues when e-working remotely

Health Risks - Health and safety issues when e-working remotely		
<b>Construct definition:</b> refers to risks for employee injury in their respective work environment. This risks are commonly controlled through the setup of ergonomically designed computer workstations, regulated rest breaks, engineered lighting, and inspections by safety officers (Harrington & Walker, 2004)		
Instructions: In the following section you are asked to think about the health and safety issues of the places that you are conducting your work, outside your head office environment. Health and safety issues refer to comfortable conditions in your working environment (e.g. sitting correctly) and focus on the use of the right equipment in order to avoid getting hurt when working. Please indicate how much you agree with the following statements: <i>5point Likert Scale: Strongly Disagree - Disagree - Neither agree nor disagree - Agree – Strongly Agree</i>		
	When e-working remotely:	Source of the item
1	I have not paid any attention to health and safety issues while doing my job tasks	Influenced by Eurofound and the International Labour Office's (2017) report
2	My organisation has not shown any interest in the health and safety issues of the location(s) I am working at	Influenced by both Eurofound and the International Labour Office's (2017) report and Ellison's (2012) suggestion that without employer guidance there is an increasing the risk for injury
3	I have not received any training and/or guidelines and tips on health and safety issues for remote workstations	Influenced by both Eurofound and the International Labour Office's (2017) report and Ellison's (2012) suggestion that without employer guidance there is an increasing the risk for injury
4	I am not using a chair with proper lumbar support	Influenced by Ellison's (2012) suggestion that chairs that lack proper lumbar support may lead to musculoskeletal disorders.
5	I do not have a working desk at my work location	Influenced by Eurofound and the International Labour Office's (2017) report
6	I have not adjusted the position of my monitor (i.e., top at eye height, arm's distance away)	Influenced by Ellison's (2012) suggestion that improper monitor and keyboard height, may lead to musculoskeletal disorders.

7	I have not adjusted my position or my keyboard and mouse to elbow height	Influenced by Ellison's (2012) suggestion that improper monitor and keyboard height, may lead to musculoskeletal disorders.
8	I am not adjusting my equipment to keep my arms relaxed and wrists straight	Influenced by Ellison's (2012) suggestion that improper monitor and keyboard height, may lead to musculoskeletal disorders.
9	My working environment does not enable me to have a proper sitting posture	Influenced by Eurofound and the International Labour Office's (2017) report
10	I am not adjusting workstation each time I sit down at a new workstation to work	Influenced by the PhD student's interviews and the idea that people are working in different locations



**Appendix M: 74-item E-Work Well-being: Means, standard deviations, skewness and kurtosis of the items**

		<i>M</i>	<i>SD</i>	Skewness	Kurtosis
<b>Affective dimension</b>					
Emotions	Bored	2.33	1.10	.54	-.33
	Happy	3.46	.92	-.50	.29
	Sad	2.11	.98	.53	-.46
	Proud	3.01	1.09	-.09	-.50
	Frustrated	2.78	1.01	-.16	-.48
	Relaxed	3.43	1.15	-.29	-.76
	Lonely	2.52	1.28	.27	-1.08
	At ease	3.56	1.02	-.62	.12
	Stressed	2.74	1.03	.08	-.42
	Grateful	3.52	1.19	-.61	-.36
	Guilty	2.16	1.20	.62	-.82
Job satisfaction	Not being confined into an office or a single place/ location	4.09	.99	-1.03	.72
	Determining when you come to the office and when you do not	4.09	1.08	-1.05	.28
	Balancing your personal and working life	3.86	1.23	-.93	-.02
	Having the peace to reflect on your work	3.73	1.23	-.71	-.55
Emotional exhaustion	I feel emotionally exhausted when I receive too many emails and instant messages from colleagues	2.80	1.21	.20	-.70

	I feel used up when I always have my devices switched on	2.79	1.14	.18	-.73
	I feel fatigued when I am overworking	3.43	1.08	-.41	-.48
	I feel burned out when people expect me to be constantly available using technology	2.91	1.20	.16	-.91
	I feel strained when my use of information and communication technologies takes time away from my personal life	3.05	1.18	-.11	-.78
	I struggle to get my energy back after a long day of remote e-working	2.58	1.13	.35	-.69
Organisational commitment	I feel as if I am part of the organisation	3.64	1.13	-.65	-.37
	I am willing to go the extra mile for my organisation	3.87	1.07	-1.20	1.15
	I want to put significant effort on behalf of my organisation	3.89	1.08	-1.15	1.00
	I find it easy to identify with my organisations' norms and values	3.57	1.13	-.70	-.21
	I am proud that I am part of this organisation	3.86	1.12	-.92	.21
Cognitive well-being	I find it easy to concentrate on my work activities	3.91	.95	-.83	.49
	I find it hard to concentrate when I receive too many emails and instant messages from colleagues	2.88	.99	.09	-.43
	I find it easy to take in new information when I am working on a job task	3.79	.85	-.72	.83

	I struggle to concentrate when I am working in locations other than the office	2.27	.96	.70	.42
	I do not let emails and instant messages reduce my concentration	3.12	.99	.03	-.51
<b>Social wellbeing</b>					
Relationship with colleagues	I find it easy to exchange ideas and connect with my colleagues	3.50	1.16	-.63	-.58
	I am happy with the amount of face-to-face contact I have with my colleagues	3.55	1.22	-.60	-.66
	I am happy with the quality of my social interactions with colleagues	3.52	1.22	-.58	-.72
	My colleagues pay attention to my job problems and needs regardless of our location	3.51	1.21	-.65	-.46
	My colleagues and I have a good communication regardless of where we are located	3.79	1.14	-1.01	.30
	I have good relationships with my office-based colleagues regardless of the time we spend away from each other	3.81	1.05	-1.03	.74
Relationship with supervisor	My supervisor understands my problems and needs regardless of whether I am physically present or not	3.75	1.21	-.94	-.01
	My supervisor clearly communicates what is expected of me	3.71	1.21	-.75	-.35
	My supervisor appreciates and acknowledges the work that I am doing	3.78	1.21	-.86	-.22

	My supervisor trusts me to undertake my job tasks in any location	4.35	.94	-1.63	2.63
	My supervisor and I have a good relationship regardless of whether I am physically present or not	4.10	1.04	-1.21	1.15
Social isolation	I feel isolated when I am not around my colleagues on a regular basis	2.67	1.04	.28	-.41
	I am not included in social activity at work with colleagues	2.46	1.20	.59	-.51
	I feel I am not always counted as a valuable team member	2.21	1.11	.82	.07
	I have fewer opportunities to interact with colleagues than I would like	2.55	1.21	.30	-.89
	I feel I do not have somebody to bounce ideas off	2.59	1.10	.30	-.57
<b>Professional well-being</b>					
Autonomy	I feel empowered to decide what the best way is to get my job done	4.19	.91	-1.34	1.97
	I have the ability to negotiate with my supervisor what I am expected to accomplish	3.86	1.03	.87	.29
	I have the autonomy to complete my job tasks at any time	4.09	1.05	-1.14	.60
	I am enabled to prioritise my work tasks	4.29	.86	-1.56	2.82
	I have the autonomy to decide where to conduct my work activities	4.19	.95	-1.35	1.64

Competence	Overall, I am competent to do my job	4.50	.69	-1.84	5.61
	I am meeting my goals and targets, even when I am not physically with people from my organisation	4.46	.73	-1.66	4.03
	I resolve work-related issues that may arise by using information and communication technologies (such as emails, calls and instant messages)	4.40	.77	-1.54	3.22
	I have the essential IT knowledge, skills and abilities to solve any issues while I am not working in an office environment	4.22	.93	-1.16	1.18
	I effectively communicate with people using information and communication technologies	4.42	.78	-1.73	4.30
Career development	I make myself visible to the right people in the organisation in order to be promoted	3.25	1.14	-.28	-.56
	My supervisor provides me with constructive feedback that I need to develop professionally	3.59	1.17	-.71	-.19
	I feel that I am missing relevant information that may enhance my work-related skills	2.62	1.10	.10	-.89
	I feel that I can easily be forgotten regarding career opportunities that come up in my organisation	2.77	1.23	.11	-1.09
	My organisation understands that people working remotely need adequate career opportunities	3.39	1.02	-.34	-.06

<b>Psychosomatic well-being</b>					
	I felt my body becoming very stiff	2.92	1.15	-.14	-.72
	I have suffered from shoulder pains	2.82	1.25	.16	-.94
	I suffered from pain in my lower limbs such as feet, thighs and hips – lower body	2.33	1.21	.56	-.64
	I had pain in the upper body such as forearms and elbows	2.20	1.18	.70	-.43
	My joints felt sore	2.31	1.19	.56	-.57
	I experienced neck pains	2.79	1.27	.13	-1.01
	I experienced back pain	2.82	1.27	.10	-.98
	I experienced tendon pain in the wrists and fingers <sup>11</sup>	2.15	1.19	.77	-.41
	I experienced discomfort in my eyes (e.g., sore, tired or dry eyes)	2.76	1.25	.04	-1.07
	I had problems with my sleep	2.50	1.31	.44	-.91
	I felt very tired and/or fatigued	2.92	1.2	-.05	-.83
	I had constant headaches and/or migraines	2.14	1.19	.91	.02

## Appendix N: Health and Safety/ Ergonomics items descriptive statistics, factor loadings, and Cronbach's alpha

Ergonomics (Health and Safety)						
		Factor loading	Descriptive statistics			
		1 –Factor solution	Mean	SD	Skewness	Kurtosis
1	I do not pay attention to health and safety issues while doing my job tasks	.47	2.72	1.25	.27	-1.10
2	My organisation does not consider health and safety issues of the location(s) I am working at	.63	2.70	1.34	.22	-1.17
3	I have not received any training and/or guidelines and tips on health and safety issues for remote workstations	.57	2.93	1.51	.00	-1.46
4	I do not use a chair with proper lumbar support	.78	3.20	1.48	-.23	-1.38
5	I do not have a properly designed desk	.86	3.19	1.52	-.22	-1.46
6	My working environment does not enable me to have a proper sitting posture	.85	2.94	1.42	.05	-1.35

### Appendix O: EFA solution for individual constructs of the E-Work Well-being scale- Mplus

No.	Sub-dimension	Item	One-Factor solution	Two-factor solution	
			Factor 1	Factor 1	Factor 2
1	Emotions	Bored		.57*	.08
2		Happy		-.04	.71*
3		Sad		<b>.88*</b>	-.00
4		Proud		.12	<b>.42*</b>
5		Frustrated		.70*	.01
6		Relaxed		-.02	.77*
7		Lonely		.71*	-.01
8		At ease		.00	<b>.86*</b>
9		Stressed		.59*	-.10
10		Grateful		.14	.76*
11		Guilty		<b>.44*</b>	.12
1	Emotional exhaustion	I feel emotionally exhausted when I receive too many emails and instant messages from colleagues	.74*		



2		I feel used up when I always have my devices switched on	.85*		
3		I feel fatigued when I am overworking	.69*		
4		I feel burned out when people expect me to be constantly available using technology	.87*		
5		I feel strained when my use of information and communication technologies takes time away from my personal life	.85*		
6		I struggle to get my energy back after a long day of remote e-working	.65*		
1	Organisational commitment	I feel as if I am part of the organisation	.67*		
2		I am willing to go the extra mile for my organisation	.90*		
3		I want to put significant effort on behalf of my organisation	.94*		
4		I find it easy to identify with my organisations' norms and values	.79*		
5		I am proud that I am part of this organisation	.75*		
1	Job Satisfaction	Not being confined into an office or a single place/ location	.63*		
2		Determining when you come to the office and when you do not	.64*		
3		Balancing your personal and working life	.79*		
4		Having the peace to reflect on your work	.71*		

CW 1	Cognitive weariness	I find it easy to concentrate on my work activities (R)	.84*		
CW 2		I find it hard to concentrate when I receive too many emails and instant messages from colleagues	-.20		
CW 3		I find it easy to take in new information when I am working on a job task (R)	.63*		
CW 4		I struggle to concentrate when I am working in locations other than the office	-.36*		
CW 5		I do not let emails and instant messages reduce my concentration (R)	.36*		
1	Relationships with colleagues	I find it easy to exchange ideas and connect with my colleagues	.69*	.36*	.37*
2		I am happy with the amount of face-to-face contact I have with my colleagues	.81*	.67*	.20
3		I am happy with the quality of my social interactions with colleagues	.84*	.97*	-.00
4		My colleagues pay attention to my job problems and needs regardless of our location	.71*	.11	.67*
5		My colleagues and I have a good communication regardless of where we are located	.80*	-.01	.92*

6		I have good relationships with my office-based colleagues regardless of the time we spend away from each other	.72*	.23	.55*
1	Relationships with supervisor	My supervisor understands my problems and needs regardless of whether I am physically present or not	.88*		
2		My supervisor clearly communicates what is expected of me	.81*		
3		My supervisor appreciates and acknowledges the work that I am doing	.88*		
4		My supervisor trusts me to undertake my job tasks in any location	.77*		
5		My supervisor and I have a good relationship regardless of whether I am physically present or not	.86*		
1	Social isolation	I feel isolated when I am not around my colleagues on a regular basis	.74*		
2		I am not included in social activity at work with colleagues	.67*		
3		I feel I am not always counted as a valuable team member	.49*		
4		I have fewer opportunities to interact with colleagues than I would like	.78*		
5		I feel I do not have somebody to bounce ideas off	.75*		
1	Autonomy	I feel empowered to decide what the best way is to get my job done	.60*	.32	.36
2		I have the ability to negotiate with my supervisor what I am expected to accomplish	.51*	.00	.67*

3		I have the autonomy to complete my job tasks at any time	.87*	.87*	.01
4		I am enabled to prioritise my work tasks	.81*	.70*	.14
5		I have the autonomy to decide where to conduct my work activities	.85*	.89*	-.04
1	Competence	Overall, I am competent to do my job	.80*		
2		I am meeting my goals and targets, even when I am not physically with people from my organisation	.77*		
3		I resolve work-related issues that may arise by using information and communication technologies (such as emails, calls and instant messages)	.83*		
4		I have the essential IT knowledge, skills and abilities to solve any issues while I am not working in an office environment.	.60*		
5		I effectively communicate with people using information and communication technologies	.76*		
1	Career development	I make myself visible to the right people in the organisation in order to be promoted	-.34*	-.13	.36*
2		My supervisor provides me with constructive feedback that I need to develop professionally	-.36*	.02	.71*
3		I feel that I am missing relevant information that may enhance my work-related skills (R)	.72*	.62*	-.09

4		I feel that I can easily be forgotten regarding career opportunities that come up in my organisation(R)	.79*	.96*	.00
5		My organisation understands that people working remotely need adequate career opportunities	-.56*	-.25	.61*
1	<b>Physical conditions</b>	I felt my body becoming very stiff		.56*	.25*
2		I have suffered from shoulder pains		.86*	-.01
3		I suffered from pain in my lower limbs such as feet, thighs and hips		.45*	.37*
4		I had pain in the upper body such as forearms and elbows		.53*	.24
5		My joints felt sore		.57*	.29
6		I experienced neck pains		.82*	.04
7		I experienced back pain		.82*	-.04
8		I experienced tendon pain in the wrists and fingers		.29	.38*
9		I experienced discomfort in my eyes (e.g., sore, tired or dry eyes)		.20	.59*
10		I had problems with my sleep		-.13	.89*
11		I felt very tired and/or fatigued		.01	.78*
12		I had constant headaches and/or migraines		.07	.53*

### Appendix P: ESEM 9-FACTOR SOLUTION

		Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
1.	Bored	.00	<b>.65</b>	.11	.11	.14	.02	.02	.01	.01
2.	Happy	<b>.68</b>	.15	.05	.13	.09	.04	.06	.05	.02
3.	Sad	.08	<b>.65</b>	.05	.01	.15	.02	.03	.03	.09
4.	Proud	<b>.33</b>	.03	.07	.15	.16	.01	.05	.15	.01
5.	Frustrated	.04	<b>.47</b>	.04	.07	<b>.40</b>	.05	.12	.02	.12
6.	Relaxed	<b>.62</b>	.04	.03	.09	.20	.03	.25	.03	.11
7.	Lonely	.17	<b>.74</b>	.02	.00	.05	.06	.06	.08	.04
8.	At ease	<b>.74</b>	.01	.08	.00	.10	.01	.17	.03	.01
9.	Stressed	.03	<b>.43</b>	.18	.01	.46	.04	.02	.03	.01
10.	Grateful	<b>.63</b>	.05	.11	.02	.00	.08	.22	.01	-.02
11.	Guilty	.12	<b>.33</b>	.21	.16	-.37	-.00	.06	-.05	-.09
12.	Not being confined into an office or a single place/ location	.10	.09	.19	<b>.36</b>	<b>.41</b>	.02	.04	.01	.02
13.	Determining when you come to the office and when you do not	.01	.02	.16	.21	<b>.48</b>	.06	.03	.27	.10

14.	Balancing your personal and working life	.00	.13	.02	.34	<b>.68</b>	.05	.00	.05	.07
15.	Having the peace to reflect on your work	.15	.03	.05	<b>.40</b>	<b>.53</b>	.01	.01	.01	.02
16.	I feel emotionally exhausted when I receive too many emails and instant messages from colleagues	.06	.02	<b>.73</b>	.01	.11	.01	.05	0	.02
17.	I feel used up when I always have my devices switched on	.01	.02	<b>.79</b>	.00	.01	.02	.08	.04	.11
18.	I feel fatigued when I am overworking	.02	.02	<b>.72</b>	.05	.01	.02	.09	.09	.01
19.	I feel burned out when people expect me to be constantly available using technology	.02	.08	<b>.81</b>	.04	.00	.05	.07	.02	.02
20.	I feel strained when my use of information and communication technologies takes time away from my personal life	-.07	0	<b>.85</b>	-.12	.03	.04	.04	0	.04
21.	I feel as if I am part of the organisation	.04	-.17	-.04	<b>.50</b>	.02	.06	.21	.00	-.07
22.	I am willing to go the extra mile for my organisation	-.02	-.03	-.01	<b>.95</b>	-.05	-.05	-.04	.04	.04
23.	I want to put significant effort on behalf of my organisation	-.07	.02	-.01	<b>.96</b>	0	-.01	.03	.01	.07

24.	I find it easy to identify with my organisations' norms and values	.05	.03	-.01	<b>.69</b>	.04	.12	.09	-.02	-.10
25.	I am proud that I am part of this organisation	.01	-.05	.01	<b>.55</b>	.03	.17	.19	.05	-.11
26.	I find it easy to exchange ideas and connect with my colleagues	.07	-.01	.04	.18	-.07	-.08	<b>.63</b>	.01	-.02
27.	I am happy with the amount of face-to-face contact I have with my colleagues	.10	-.27	-.04	.05	.05	.07	<b>.57</b>	-.04	.10
28.	I am happy with the quality of my social interactions with colleagues	.03	-.13	.05	.03	-.01	.04	<b>.68</b>	.04	-.05
29.	My colleagues and I have a good communication regardless of where we are located	.04	-.11	-.05	.03	.02	.15	<b>.70</b>	0	.09
30.	I have good relationships with my office-based colleagues regardless of the time we spend away from each other	-.07	-.04	-.02	.16	-.00	.13	<b>.64</b>	.03	.06



		Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
31.	My supervisor understands my problems and needs regardless of whether I am physically present or not	.10	.08	.04	.04	.04	<b>.83</b>	.03	.01	.04
32.	My supervisor clearly communicates what is expected of me	.01	.02	.03	.03	.04	<b>.80</b>	.08	.03	.00
33.	My supervisor appreciates and acknowledges the work that I am doing	.04	.01	.05	.02	.01	<b>.89</b>	.03	.03	.00
34.	My supervisor trusts me to undertake my job tasks in any location	.04	.08	.02	.01	.01	<b>.74</b>	.06	.27	.02
35.	My supervisor and I have a good relationship regardless of whether I am physically present or not	.03	.05	.03	.02	.11	<b>.84</b>	.03	.16	.06
36.	I feel isolated when I am not around my colleagues on a regular basis	.03	<b>.70</b>	.02	0	.08	.01	.02	.02	.11
37.	I am not included in social activity at work with colleagues	.16	<b>.59</b>	.03	.08	.08	.03	.07	.05	.01
38.	I feel I am not always counted as a valuable team member	.07	<b>.41</b>	.08	.05	.02	.23	.01	.01	.16

39.	I have fewer opportunities to interact with colleagues than I would like	.08	<b>.70</b>	.011	.02	.03	.03	.09	.03	.08
40.	I feel I do not have somebody to bounce ideas off	.19	<b>.58</b>	.07	.21	.02	.01	.03	.05	.01
41.	I feel empowered to decide what the best way is to get my job done	.21	.22	.07	.03	.01	.11	.01	<b>.50</b>	.08
42.	I have the autonomy to complete my job tasks at any time	.19	.03	.05	.09	.21	.15	.10	<b>.47</b>	.06
43.	I am enabled to prioritise my work tasks	.13	.05	.01	.00	.11	.19	.04	<b>.58</b>	.01
44.	I have the autonomy to decide where to conduct my work activities	.22	.11	.01	.09	.13	.19	.11	<b>.49</b>	.00
45.	Overall, I am competent to do my job	-.03	-.04	.01	-.03	.01	-.01	.18	<b>.77</b>	.11
46.	I am meeting my goals and targets, even when I am not physically with people from my organisation	-.01	-.05	.03	-.03	.01	.09	.13	<b>.72</b>	.06
47.	I resolve work-related issues that may arise by using information and communication technologies (such as emails, calls and instant messages)	-.01	.08	.01	.02	-.07	-.07	.32	<b>.66</b>	-.01

48.	I have the essential IT knowledge, skills and abilities to solve any issues while I am not working in an office environment	.04	.00	-.08	.04	-.03	-.19	.13	<b>.56</b>	-.09
49.	I effectively communicate with people using information and communication technologies	-.01	.16	-.01	-.04	-.02	-.09	.38	<b>.64</b>	-.09
50.	I have suffered from shoulder pains	.08	-.02	-.05	.01	-.02	.02	-.01	-.02	<b>.90</b>
51.	I suffered from pain in my lower limbs such as feet, thighs and hips – lower body	-.07	.12	-.01	-.10	.15	-.02	.06	.04	<b>.62</b>
52.	My joints felt sore	.06	.11	.04	-.04	-.03	-.01	-.03	.03	<b>.66</b>
53.	I experienced neck pains	.06	-.07	.08	.00	-.02	.04	-.08	-.01	<b>.85</b>
54.	I experienced back pain	-.02	.06	-.04	.00	.09	-.03	.12	.01	<b>.81</b>
55.	I experienced discomfort in my eyes (e.g., sore, tired or dry eyes)	-.08	.16	.06	-.04	-.05	.02	.01	.07	<b>.52</b>
56.	I had problems with my sleep	.09	.23	.16	.04	.05	.08	.04	.05	<b>.36</b>
57.	I felt very tired and/or fatigued	.06	.24	.13	.02	.16	.02	.04	.02	<b>.39</b>
58.	I had constant headaches and/or migraines	.17	.11	.12	.00	.07	.04	.04	.05	<b>.36</b>

**Appendix Q: E-Work Well-being scale – 58-Items kept for the correlation analyses in the Pilot study**

<b>(e) Affective well-being dimension:</b> <i>Emotions:</i>	<b>Kept/deleted (based on EFA and ESEM)</b>
When e-working remotely I feel:	
1. Bored	Kept
2. Happy	Kept
3. Sad	Kept
4. Proud	Kept
5. Frustrated	Kept
6. Relaxed	Kept
7. Lonely	Kept
8. At ease	Kept
9. Stressed	Kept
10. Grateful	Kept
11. Guilty	Kept
<i><b>Job satisfaction:</b></i>  “When e-working remotely, how satisfied are you with the following:”	
5. Not being confined into an office or a single place/ location	Kept
6. Determining when you come to the office and when you do not	Kept
7. Balancing your personal and working life	Kept
8. Having the peace to reflect on your work	Kept
<i><b>Emotional exhaustion</b></i>  When e-working remotely:	

1. I feel emotionally exhausted when I receive too many emails and instant messages from colleagues	Kept
2. I feel used up when I always have my devices switched on	Kept
3. I feel fatigued when I am overworking	Kept
4. I feel burned out when people expect me to be constantly available using technology	Kept
5. I feel strained when my use of information and communication technologies takes time away from my personal life	Kept
6. I struggle to get my energy back after a long day of remote e-working	<b>Deleted</b>
<b><i>Organisational commitment</i></b>	
When e-working remotely:	
1. I feel as if I am part of the organisation	Kept
2. I am willing to go the extra mile for my organisation	Kept
3. I want to put significant effort on behalf of my organisation	Kept
4. I find it easy to identify with my organisations' norms and values	Kept
5. I am proud that I am part of this organisation	Kept
<b><i>Cognitive well-being dimension - Cognitive weariness</i></b>	
When I e-work remotely:	
6. I find it easy to concentrate on my work activities (R)	<b>Deleted</b>
7. I find it hard to concentrate when I receive too many emails and instant messages from colleagues	<b>Deleted</b>
8. I find it easy to take in new information when I am working on a job task (R)	<b>Deleted</b>
9. I struggle to concentrate when I am working in locations other than the office	<b>Deleted</b>
10. I do not let emails and instant messages reduce my concentration (R)	<b>Deleted</b>
<b><i>(f) Social well-being dimension – Relationships with colleagues</i></b>	
When e-working remotely:	
1. I find it easy to exchange ideas and connect with my colleagues	Kept
2. I am happy with the amount of face-to-face contact I have with my colleagues	Kept
3. I am happy with the quality of my social interactions with colleagues	Kept
4. My colleagues pay attention to my job problems and needs regardless of our location	<b>Deleted</b>

5. My colleagues and I have a good communication regardless of where we are located	Kept
6. I have good relationships with my office-based colleagues regardless of the time we spend away from each other	Kept
<b><i>Relationships with supervisor:</i></b>  When e-working remotely:	
1. My supervisor understands my problems and needs regardless of whether I am physically present or not	Kept
2. My supervisor clearly communicates what is expected of me	Kept
3. My supervisor appreciates and acknowledges the work that I am doing	Kept
4. My supervisor trusts me to undertake my job tasks in any location	Kept
5. My supervisor and I have a good relationship regardless of whether I am physically present or not	Kept
<b><i>Social Isolation:</i></b>  When e-working remotely:	
1. I feel isolated when I am not around my colleagues on a regular basis	Kept
2. I am not included in social activity at work with colleagues	Kept
3. I feel I am not always counted as a valuable team member	Kept
4. I have fewer opportunities to interact with colleagues than I would like	Kept
5. I feel I do not have somebody to bounce ideas off	Kept
<b>(g) Professional well-being dimension</b> <b><i>Autonomy</i></b>	
When e-working remotely:	
1. I feel empowered to decide what the best way is to get my job done	Kept
2. I have the ability to negotiate with my supervisor what I am expected to accomplish	<b>Deleted</b>
3. I have the autonomy to complete my job tasks at any time	Kept
4. I am enabled to prioritise my work tasks	Kept
5. I have the autonomy to decide where to conduct my work activities	Kept
<b><i>Competence</i></b>  When e-working remotely:	

1. Overall, I am competent to do my job	Kept
2. I am meeting my goals and targets, even when I am not physically with people from my organisation	Kept
3. I resolve work-related issues that may arise by using information and communication technologies (such as emails, calls and instant messages)	Kept
4. I have the essential IT knowledge, skills and abilities to solve any issues while I am not working in an office environment.	Kept
5. I effectively communicate with people using information and communication technologies	Kept
<b><i>Career development</i></b>	
When e-working remotely:	
1. I make myself visible to the right people in the organisation in order to be promoted	<b>Deleted</b>
2. My supervisor provides me with constructive feedback that I need to develop professionally	<b>Deleted</b>
3. I feel that I am missing relevant information that may enhance my work-related skills (R)	<b>Deleted</b>
4. I feel that I can easily be forgotten regarding career opportunities that come up in my organisation(R)	<b>Deleted</b>
5. My organisation understands that people working remotely need adequate career opportunities	<b>Deleted</b>
<b>(h) Physical well-being dimension</b> <b>Physical conditions .96 ; .95; 92</b>  When e-working remotely:	
1. I felt my body becoming very stiff	<b>Deleted</b>
2. I have suffered from shoulder pains	Kept
3. I suffered from pain in my lower limbs such as feet, thighs and hips	Kept
4. I had pain in the upper body such as forearms and elbows	<b>Deleted</b>
5. My joints felt sore	Kept
6. I experienced neck pains	Kept
7. I experienced back pain	Kept
8. I experienced tendon pain in the wrists and fingers	<b>Deleted</b>
9. I experienced discomfort in my eyes (e.g., sore, tired or dry eyes)	Kept

10. I had problems with my sleep	Kept
11. I felt very tired and/or fatigued	Kept
12. I had constant headaches and/or migraines	Kept



## Appendix R: Pilot study: Control variable checks

### Independent sample t-tests between gender and outcome variables examined.

Outcome variable		M	SE	t	df	p
Social support	Male	3.94	.11	.28	199	.78
	Female	3.91	.07			
Work demands	Male	3.34	.09	.44	199	.66
	Female	3.29	.05			
Positive mental health	Male	3.63	.09	.37	199	.72
	Female	3.60	.05			
Psychological distress	Male	2.07	.15	-.75	199	.46
	Female	2.18	.07			
Sleep problems	Male	2.06	.12	.37	199	.71
	Female	2.01	.06			
Detachment from work	Male	3.03	.13	-.13	199	.90
	Female	3.05	.08			
Self-efficacy	Male	4.08	.08	1.25	199	.21
	Female	3.96	.05			
Negative emotions	Male	2.45	.11	.22	199	.83
	Female	2.42	.06			
Positive emotions	Male	3.32	.11	-.72	199	.47
	Female	3.42	.07			
Organisational commitment	Male	3.81	.12	.35	199	.72
	Female	3.75	.05			
Job satisfaction	Male	3.73	.13	-1.82	199	.08
	Female	4.00	.07			
Emotional exhaustion	Male	2.87	.14	-1.03	199	.30
	Female	3.03	.08			
Relationships with colleagues	Male	3.60	.13	-.34	199	.74
	Female	3.65	.08			
Relationship with supervisor	Male	3.84	.14	-.72	199	.47
	Female	3.96	.08			
Social Isolation	Male	2.46	.14	-.27	199	.79
	Female	2.50	.07			
Autonomy	Male	4.15	.12	-.36	199	.72
	Female	4.20	.06			
Competence	Male	4.40	.08	-.04	199	.97
	Female	4.40	.05			
Overall Psychosomatic Health	Male	2.34	.16	-2.04	199	.07
	Female	2.66	.07			
Musculoskeletal symptoms	Male	2.30	.16	-2.30	199	.06
	Female	2.70	.08			
Fatigue	Male	2.40	.16	-1.27	199	.20
	Female	2.61	.08			

**Independent sample t-tests between having children and outcome variables examined.**

Variable		M	SE	t	df	p
Social support	Have children	3.88	.11	-.28	200	.26
	No children	3.92	.07			
Work demands	Have children	3.31	.09	.11	200	.91
	No children	3.3	.05			
Positive mental health	Have children	3.52	.09	-.94	200	.35
	No children	3.62	.05			
Psychological distress	Have children	2.06	.12	-.86	200	.39
	No children	2.19	.07			
Sleep problems	Have children	1.99	.13	-.45	200	.65
	No children	2.04	.06			
Detachment from work	Have children	2.99	.14	-.5	200	.62
	No children	3.06	.07			
Self-efficacy	Have children	3.96	.09	-.39	200	.7
	No children	3.99	.04			
Negative emotions	Have children	2.36	.09	-.81	200	.42
	No children	2.47	.07			
Positive emotions	Have children	3.43	.1	.35	200	.73
	No children	3.39	.07			
Organisational commitment	Have children	3.74	.14	-.45	200	.82
	No children	3.77	.08			
Job satisfaction	Have children	4.08	.11	1.22	200	.22
	No children	3.9	.07			
Emotional exhaustion	Have children	3.09	.14	.75	200	.45
	No children	2.97	.08			
Relationships with colleagues	Have children	3.64	.13	.02	200	.98
	No children	3.63	.08			
Relationship with supervisor	Have children	3.98	.12	.33	200	.74
	No children	3.92	.08			
Social Isolation	Have children	2.45	.1	-.45	200	.65
	No children	2.51	.07			
Autonomy	Have children	4.26	.11	.64	200	.52
	No children	4.17	.07			
Competence	Have Children	4.32	.09	-1.03	200	.3
	No children	4.42	.05			
Overall Psychos. Health	Have Children	2.67	.12	.63	200	.53
	No children	2.58	.08			
Musculoskeletal symptoms	Have Children	2.74	.15	.99	200	.33
	No children	2.57	.08			
Fatigue	Have Children	2.58	.12	.03	200	.97
	No children	2.58	.08			

## Assumptions met to run ANOVAs

- **Assumption 1:** Dependent variable should be continuous
- **Assumption 2:** The independent variable should consist of two or more categorical, independent groups.
- **Assumption 3:** No relationship between the observations in each group or between the groups themselves.
- **Assumption 4:** Absence of outliers.
- **Assumption 5:** Dependent variable should be approximately normally distributed for each category of the independent variable. ANOVA is robust to violations of normality, meaning that assumption can be a little violated and still provide valid results.
- **Assumption 6:** Homogeneity of variances is needed which can be tested using Levene's test for homogeneity of variances. If your data fails this assumption, you will need to not only

### ANOVAs to test differences between the main work locations

Outcome variable		M	SE	F	Sig
Social Support	Main office	4.06	.07	4.17	<b>.02</b>
	Home	3.71	.10		
	Other location	3.81	.20		
Work Demands	Main office	3.32	.06	1.02	.36
	Home	3.23	.08		
	Other location	3.47	.18		
General Wellbeing	Main office	3.66	.06	1.96	.14
	Home	3.56	.07		
	Other location	3.34	.26		
Psychological Distress	Main office	2.04	.08	3.25	<b>.04</b>
	Home	2.24	.10		
	Other location	2.58	.28		
Sleeping Problems	Main office	1.94	.07	1.53	.22
	Home	2.13	.10		
	Other location	2.17	.22		
Detachment from work	Main office	3.09	.08	.37	.69
	Home	2.97	.12		
	Other location	3.08	.27		
Self-efficacy	Main office	3.96	.06	.5	.61
	Home	4.00	.06		
	Other location	4.10	.16		
Ergonomics	Main office	2.67	.09	10	<b>.01</b>
	Home	3.36	.11		
	Other location	2.91	.38		

Negative emotions	Main office	2.22	.07	1.53	<b>.01</b>
	Home	2.71	.09		
	Other location	2.68	.25		
Positive emotions	Main office	3.37	.08	.85	.43
	Home	3.47	.08		
	Other location	3.20	.23		
Organisational commitment	Main office			2.09	.13
		3.86	.08		
	Home	3.70	.11		
Job satisfaction	Other location	3.39	.34	1.71	<b>.01</b>
	Main office	3.89	.08		
	Home	4.19	.09		
Emotional exhaustion	Other location	3.14	.28	.45	.64
	Main office	3.00	.08		
	Home	3.04	.12		
Relationship with colleagues	Other location	2.79	.33	2.94	<b>.06</b>
	Main office				
		3.78	.09		
Relationship with supervisor	Home	3.44	.11	.91	.41
	Other location	3.55	.29		
	Main office				
Social Isolation		3.90	.10	8.33	<b>.01</b>
	Home	3.93	.11		
	Other location	4.25	.21		
Autonomy	Main office	2.28	.08	3.87	<b>.02</b>
	Home	2.76	.10		
	Other location	2.74	.25		
Competence	Main office	4.08	.08	2.59	.08
	Home	4.39	.07		
	Other location	4.02	.23		
Overall physical well-being	Main office	4.31	.07	5.15	<b>.01</b>
	Home	4.49	.06		
	Other location	4.58	.10		
Musculoskeletal symptoms	Main office			4.6	<b>.01</b>
		2.42	.07		
	Home	2.80	.12		
Fatigue symptoms	Other location	2.94	.27	3.97	<b>.02</b>
	Main office				
		2.42	.08		
	Home	2.85	.13		
	Other location	2.89	.34		
	Main office	2.41	.08		
	Home	2.73	.13		
	Other location	3.00	.23		

*Note:* Degrees of freedom (df) are 199 for all ANOVAs run

**Multiple Comparisons - Tukey post hoc indicating significant differences between main work locations.**

Dependent Variable			Mean Difference	Std. Error	Sig.
Social Support	<b>1.00</b>	<b>2.00</b>	<b>.34</b>	<b>.12</b>	<b>.01</b>
		3.00	.24	.22	.50
	2.00	1.00	-.34	.12	.01
		3.00	-.1	.22	.90
	3.00	1.00	-.24	.22	.50
		2.00	.1	.22	.90
Psychological Distress	1.00	2.00	-.2	.13	.29
		3.00	-.54	.23	.05
	2.00	1.00	.2	.13	.29
		3.00	-.35	.24	.32
	<b>3.00</b>	<b>1.00</b>	<b>.54</b>	<b>.23</b>	<b>.05</b>
		2.00	.35	.24	.32
Ergonomics	<b>1.00</b>	<b>2.00</b>	<b>-.68</b>	<b>.15</b>	<b>.01</b>
		3.00	-.23	.28	.67
	2.00	1.00	.68	.15	.01
		3.00	.45	.28	.25
	3.00	1.00	.23	.28	.67
		2.00	-.45	.28	.25
Negative emotions	<b>1.00</b>	<b>2.00</b>	<b>-.48</b>	<b>.11</b>	<b>.01</b>
		3.00	-.45	.2	.06
	2.00	1.00	.48	.11	.01
		3.00	.03	.2	.98
	3.00	1.00	.45	.2	.06
		2.00	-.03	.2	.98
Job satisfaction	<b>1.00</b>	<b>2.00</b>	<b>-.3</b>	<b>.13</b>	<b>.04</b>
		3.00	.74	.23	0
	2.00	1.00	.3	.13	.04
		3.00	1.05	.23	0
	3.00	1.00	-.74	.23	0
		2.00	-1.05	.23	0
Social isolation	<b>1.00</b>	<b>2.00</b>	<b>-.48</b>	<b>.12</b>	<b>.01</b>
		3.00	-.46	.22	.10
	2.00	1.00	.48	.12	.01
		3.00	.03	.23	.99
	3.00	1.00	.46	.22	.1
		2.00	-.03	.23	.99
Autonomy	<b>1.00</b>	<b>2.00</b>	<b>-.3</b>	<b>.12</b>	<b>.03</b>
		3.00	.07	.21	.95
	2.00	1.00	.3	.12	.03
		3.00	.37	.22	.20
	3.00	1.00	-.07	.21	.95

		2.00	-.37	.22	.20
Overall psychosomatic health	<b>1.00</b>	<b>2.00</b>	<b>-.38</b>	<b>.14</b>	<b>.02</b>
		3.00	-.52	.24	.08
	2.00	1.00	.38	.14	.02
		3.00	-.14	.25	.84
	3.00	1.00	.52	.24	.08
		2.00	.14	.25	.84
Musculoskeletal	<b>1.00</b>	<b>2.00</b>	<b>-.42</b>	<b>.15</b>	<b>.01</b>
		3.00	-.47	.27	.20
	2.00	1.00	.42	.15	.01
		3.00	-.04	.28	.99
	3.00	1.00	.47	.27	.20
		2.00	.04	.28	.99
Fatigue	1.00	2.00	-.32	.15	.08
		3.00	-.59	.26	.07
	2.00	1.00	.32	.15	.08
		3.00	-.27	.27	.59
	3.00	1.00	.59	.26	.07
		2.00	.27	.27	.59

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*Notes.* 1 = Office as the main work location; 2 = Home as the main work location; 3 = Main work location as other (e.g., client site).

Correlations between control and outcome variables

	Extra hours worked	Hours e- work per week	Remote e- working tenure	Driving	Commuting
Social Support	-.11	-.13	-.01	-.04	.01
Work Demands	<b>.32**</b>	.14	.08	.06	-.01
General Wellbeing	-.10	-.08	.08	<b>.16*</b>	-.04
Psychological Distress	<b>.24**</b>	.11	<b>-.16*</b>	.06	<b>.17*</b>
Sleeping Problems	<b>.21**</b>	.04	-.01	.02	.07
Detachment from work	<b>-.45**</b>	<b>-.22**</b>	-.09	.06	.09
Self-efficacy	.04	.06	<b>.18*</b>	.03	-.06
Negative emotions	<b>.18*</b>	<b>.23**</b>	-.01	<b>.15*</b>	.03
Positive emotions	<b>-.18*</b>	.08	.06	.03	-.02
Organisational commitment	-.02	.04	.12	-.04	-.13
Job satisfaction	-.05	.14	.11	<b>-.16*</b>	<b>-.22**</b>
Emotional exhaustion	<b>.37**</b>	<b>.16*</b>	.09	.01	-.07
Relationships with colleagues	-.06	-.13	.08	.11	.01
Relationship with supervisor	-.13	-.03	.03	-.04	.07
Social Isolation	.02	<b>.15*</b>	-.03	.12	.03
Autonomy	.04	<b>.18**</b>	<b>.20**</b>	-.05	<b>-.16*</b>
Competence	.11	<b>.19**</b>	<b>.19**</b>	-.05	<b>-.17*</b>
Overall Psychosomatic Health	<b>.22**</b>	.14	.02	.05	.05
Musculoskeletal symptoms	<b>.15*</b>	.11	.05	.04	.02
Fatigue	<b>.25**</b>	<b>.14*</b>	-.01	.06	.08
Ergonomics	.14	.13	.02	-.02	.03

## **Appendix S: The 71-item version of the E-Work Well-being scale. Revised based on the pilot study**

### **Affective well-being dimension:**

#### ***Emotions:***

Instructions: “Below are a list of different emotions that you may experience when e-working remotely. Please indicate the amount to which remote e-working has made you feel the following emotions recently”.

(5point Likert Scale: Never – Rarely - Occasionally - Frequently - Very frequently)

When e-working remotely I feel:

1. Bored
2. Happy
3. Sad
4. Proud
5. Frustrated
6. Relaxed
7. Lonely
8. At ease
9. Stressed
10. Grateful
11. Guilty

#### ***Job satisfaction:***

Instructions: “Below are a number of statements that describe different characteristics of e-work practices. Thinking of the past 30 days, please indicate how much satisfied you are with the following aspects of your work?”

(5point Likert Scale: Not at all - To a small extent - To some extent - To a moderate extent – To a large extent)

“When e-working remotely, how satisfied are you with the following:”

1. Not being confined into an office or a single place/ location
2. Determining when you come to the office and when you do not
3. Balancing your personal and working life
4. Having the peace to reflect on your work

#### ***Emotional exhaustion***

Instructions: “There are situation at work that may be difficult and challenging. May you please indicate how frequently you have currently experienced what each of the following statements describes”?

(5point Likert Scale: Never – Rarely - Occasionally - Frequently - Very frequently)

When e-working remotely:

1. I feel emotionally exhausted when I receive too many emails and instant messages from colleagues
2. I feel used up when I always have my devices switched on
3. I feel fatigued when I am overworking
4. I feel burned out when people expect me to be constantly available using technology
5. I feel strained when my use of information and communication technologies takes time away from my personal life

#### ***Organisational commitment***



Instructions: "Below you are asked to indicate how committed you are to your organisation at the moment. Commitment refers to how strongly attached you are to your organisation, how much your values are aligned and whether you are keen on going the extra mile for them. Please indicate the degree to which you agree with the following:

(5point Likert Scale: Strongly Disagree - Disagree – Neither agree nor disagree - Agree - Strongly Agree")

When e-working remotely:

1. I feel as if I am part of the organisation
2. I am willing to go the extra mile for my organisation
3. I want to put significant effort on behalf of my organisation
4. I find it easy to identify with my organisations' norms and values
5. I am proud that I am part of this organisation

#### **b. Cognitive well-being dimension**

##### ***Cognitive weariness***

Instructions: "Below you are asked to think about how easily you concentrate and take up new information when you are e-working remotely. Please indicate how often you experience what the following statements describe".

5point Likert Scale: Never – Rarely - Occasionally - Frequently - Very frequently

When I e-work remotely:

1. I find it hard to concentrate on my work activities"
2. I find it difficult to take in new information when I am working on a job task
2. Receiving emails and instant messages decreases my concentration
3. I cannot think clearly about work tasks when I receive too many emails and instant messages from colleagues
4. My thinking is interrupted when I receive too many emails and instant messages from colleagues
5. Working across multiple locations affects my ability to think clearly about work tasks

#### **Social well-being dimension**

##### ***Relationships with colleagues***

Instructions: "The following items will be asking you to reflect on your relationships with colleagues at work when e-working remotely. Please indicate how much you agree with what the following statements claim":

(5point Likert scale: Strongly Disagree - Disagree – Neither agree nor disagree - Agree - Strongly Agree)

When e-working remotely:

1. I find it easy to exchange ideas and connect to my colleagues
2. I am happy with the amount of face-to-face contact I have with my colleagues
3. I am happy with the quality of my social interactions with colleagues
4. My colleagues and I have a good communication regardless of where we are located
5. I have good relationships with my office-based colleagues regardless of the time we spend away from each other

##### ***Relationships with supervisor:***

Instructions: "The following items will be asking you to think about your relationships with your supervisor at work when e-working remotely. Please indicate how much you agree with what the statements claim":

(5point Likert Scale: Strongly Disagree - Disagree - Neither agree nor disagree - Agree – Strongly Agree)

When e-working remotely:

1. My supervisor understands my problems and needs regardless of whether I am physically present or not
2. My supervisor clearly communicates what is expected of me
3. My supervisor appreciates and acknowledges the work that I am doing
4. My supervisor trusts me to undertake my job tasks in any location
5. My supervisor and I have a good relationship regardless of whether I am physically present or not

***Social Isolation:***

Instructions: “Being a remote e-worker may involve working in solitude, away from colleagues and supervisors. The items below ask you to indicate how this experience may influence the degree you feel included in your organisation and working social networks. Please indicate how frequent you experience what each of the following statements describe”:

(5point Likert scale: Never – Rarely - Occasionally - Frequently - Very frequently)

When e-working remotely:

1. I feel isolated when I am not around my colleagues on a regular basis
6. I am not included in social activity at work with colleagues
3. I feel I am not always counted as a valuable team member
4. I have fewer opportunities to interact with colleagues than I would like
5. I feel I do not have somebody to bounce ideas off

**c. Professional well-being dimension**

***Autonomy***

Instructions: “In the following section you will be asked to indicate how autonomous you feel you are to conduct your job role when e-working remotely. Please state how much you agree with the following statements”:

(5point Likert Scale: Strongly Disagree - Disagree - Neither agree nor disagree - Agree – Strongly Agree)

When e-working remotely:

1. I feel empowered to decide what the best way is to get my job done
2. I have the ability to negotiate what I am expected to accomplish
3. I have the autonomy to complete my job tasks at any time
4. I am enabled to prioritise my work tasks
5. I have the autonomy to decide where to conduct my work activities

***Competence***

Instructions: “Below, you are asked to reflect on your levels of competence in your job and the extent to which you think you can successfully achieve tasks, goals and objectives when e-working remotely. Please indicate how frequent you experience what each statement describes”:

(5point Likert Scale: Never – Rarely - Occasionally - Frequently - Very frequently)

When e-working remotely:

1. Overall, I am competent to do my job
2. I am meeting my goals and targets, even when I am not physically with people from my organisation
3. I resolve work-related issues that may arise by using information and communication technologies (such as emails, calls and instant messages)

4. I have the essential IT knowledge, skills and abilities to solve any issues while I am not working in an office environment.
5. I effectively communicate with people using information and communication technologies

#### ***Career development***

Instructions: “Below you are asked to reflect on your career development and progression within your organisation (including rewards, training and promotion). The following statements ask you to think about the degree to which you can access professional development activities that you value as important for your professional advancement when e-working remotely. Please indicate how much you agree with the following statements”:

(5point Likert Scale: Strongly Disagree - Disagree - Neither agree nor disagree - Agree – Strongly Agree)

When e-working remotely:

1. I am in contact with to the right people in the organisation who could help me in getting promoted
2. I receive constructive feedback that I need to develop professionally
3. I feel that I am receiving all the relevant information that may enhance my work-related skills
4. I feel that I am acknowledged regarding career opportunities that come up in my organisation
5. My organisation understands that people working remotely need adequate career opportunities

#### **d. Physical well-being dimension**

##### **Physical conditions**

Instructions: “In this section please spare some time to think about the amount of time that you spend using an electronic device for work purposes (e.g., computer, tablet and mobile phone) when e-working. Considering the last 30 days please indicate any influence that this had on your physical conditions mentioned below”:

(5point Likert Scale: Never – Rarely - Occasionally - Frequently - Very frequently)

When e-working remotely:

1. I have suffered from shoulder pains
2. I suffered from pain in my lower limbs such as feet, thighs and hips
3. My joints felt sore
4. I experienced neck pains
5. I experienced back pain
6. I experienced discomfort in my eyes (e.g., sore, tired or dry eyes) I had problems with my sleep
7. I had problems with my sleep
8. I felt very tired and/or fatigued
9. I had constant headaches and/or migraines
10. I lack energy for work

## **Appendix T: The 22-item version of the E-Work-life. Revised based on the interviews conducted in Chapter 4.**

Instructions: "Please indicate your agreement or otherwise to the statements below".  
(5point- Likert scale 1 = strongly agree - 5 = strongly disagree)

### **Organisational Trust**

1. My organisation provides training in e-working skills and behaviours
2. My organisation trusts me to be effective in my role when I e-work remotely
3. I trust my organisation to provide good e-working facilities to allow me to e-work effectively
4. My manager does not micro-manage me when e-working remotely
5. I trust my manager to provide me with career professional developmental opportunities when e-working remotely
6. When I'm not visible e-working remotely, my manager trusts me to work effectively

### **Flexibility**

7. My manager gives me total control over when and how I get my work completed when e-working
8. My work is so flexible I could easily take time off e-working remotely, if and when I want to
9. My manager allows me to flex my hours to meet my needs, providing all the work is completed
10. There are no constraints on the location where I work providing I complete my role effectively
11. I work flexible hours across the day breaking down my hours to suit my work and non-work commitments

### **Work-life Interference**

12. My e-working does not take up time that I would like to spend with my family/friends or on other non-work activities
13. When e-working remotely I do not often think about work-related problems outside of my normal working hours
14. I am happy with my work-life balance when e-working remotely
15. Constant access to work through e-working is not very tiring
16. When e-working from home I do know when to switch off so that I can recuperate effectively
17. My relationships suffer when I am e-working remotely

### **Effectiveness/Productivity**

18. When e-working I can concentrate better on my work tasks
19. E-working makes me more effective to deliver against my key objectives and deliverables
20. If I am interrupted when working from home I still meet my manager's quality expectations
21. My overall job productivity has increased by my ability to e-work remotely/from home
22. I can cope with work demands more effectively when I e-work remotely

**Appendix U: Certificate of Ethical approval, accompanied documents (i.e., Participant Information sheet, Consent form, Debriefing statement and Gatekeeper letter, Measures used) for the Main study**



**Certificate of Ethical Approval**

Applicant:

Maria Charalampous

Project Title:

Working at anytime, anyplace, and anywhere. How is this impacting on our well-being at work? A scale development.

This is to certify that the above named applicant has completed the Coventry University Ethical Approval process and their project has been confirmed and approved as Medium Risk

Date of approval:

22 March 2019

Project Reference Number:

P87758

Working at anytime, anyplace, and anywhere. How is this impacting on our well-being at work? A scale development.

**What is the purpose of the study?**

The purpose of the study is to explore whether remote e-working, which is working away from the traditional office, can relate to your well-being at work. Specifically we will be examining whether spending at least a portion of your working time away from your head office (no matter if this is home, another site of the company, hotel or train) making use of technology to stay connected to your workplace can link to your work related thoughts and feelings at work.

**Why have I been invited to take part in the study?**

You have been invited to take part in this study as you are an employee (above the age of 18) who spends a portion of your working time away from your company's head office.

**Do I have to take part?**

There is no obligation to take part - it is entirely voluntary. If you decide to participate you are free to withdraw from the study at any given time in the two weeks following the completion of the online survey, without giving a reason. You can withdraw by contacting the PhD researcher on email and providing her with your participant information number. If you decide to withdraw all your data will be destroyed and will not be used in the study. There are no consequences to deciding that you no longer wish to participate in the study.

**What will happen to me if I take part?**

If you agree to participate in this study you will firstly be asked to tick a box to signal your consent before answering the online survey. Completing the online survey should approximately take you 20-30 minutes. Initially, you will be asked to answer some general demographic questions about yourself such as your age, gender, and work status. Then you will be provided with some statements and you will be asked to rate how much you agree with them, or how often you experience what they describe. Please note that, some of the statements are explicitly focusing on days you are e-working and some others on your general working experience.

**What are the possible benefits of taking part?**

Upon completion, you will be provided with a link to be entered into a prize draw to win one £50 Amazon voucher. The current survey will encourage you to reflect on your work experiences when working remotely. The information we get from this study could help both researchers and organisations to understand how working remotely experiences can link to well-being in the workplace. This will then help implementing and managing remote e-working attitudes and policies more effectively.

**What are the possible disadvantages and risks of taking part?**

As part of the study involves discussing about your personal experiences and feelings when e-working there is a slight risk that this could raise some anxieties or concerns; although we strongly believe that this is very unlikely. If you find that this happens, please be aware that you are under no obligation to carry on with the survey.

**What if something goes wrong?**

We do not envisage anything that will go wrong, however if participating in this study raises any issues for you, or if you have concerns about your health, we recommend that you contact your GP or a Health professional. You can also seek emotional support from Samaritans ([www.samaritans.org](http://www.samaritans.org)). Samaritans is a registered charity in the UK that aims at providing free emotional support to anyone in emotional distress through their telephone helpline 116123 or email address ([jo@samaritans.org](mailto:jo@samaritans.org)).

**What will happen to the results of the research study?**

The confidentiality of your responses is guaranteed by the researcher. Your data will be stored on a password protected computer and are planned for disposal prior to 2029. The results of the data will be analysed and discussed as part of my PhD thesis and handed into the University. It is also possible the results may be published as part of a scholarly journal and/or presented at a national/international conference. Moreover, your individual answers will not be shared with your employers, managers or supervisors. However, it worth mentioning that your company may receive a report which will summarise the general findings of the study, in order to help your company decide what needs to be amended to improve your e-working experience. The whole data protection process is adhering to GDPR regulations.

**Who is organising and funding the study?**

The study is being run by Maria Charalampous, supervised by Dr Christine Grant and Dr Carlo Tramontano at Coventry University. No funding is required.

**Who has reviewed the study?**

The study has been reviewed and has received a favourable ethical opinion from the Coventry University's Research Ethics Committee.

**Who should I contact if I have a question or concerns about this research?**

If a problem arises with the questionnaire study please contact the researcher directly. In case of complaint you could contact any member of the supervisory team. If the complaint goes unaddressed, that should be addressed to the University Applied Research Committee Chair, Prof Olivier Sparagano, Associate Pro-Vice Chancellor. Contact details are provided below.

Content removed on data protection grounds

**Thank you for taking time to read this information sheet, please do not hesitate to contact us if you have any further questions**

## Consent Statement

Faculty of Health and Life Sciences

- I have read and I understand the participant information sheet for this study
- By completing this questionnaire, I am giving my consent for the PhD researcher to use my questionnaire answers in this research study. I understand that my answers will remain anonymous and that they will be submitted to Coventry University as part of the researcher's final PhD thesis, and potentially published as part of a scholarly journal and/or presented at a national/international conference.
- I understand that in the case where my employer is collaborating with the researcher, my organization will only receive a write-up of the overall results, and not individualized answers.
- I understand that I have the right to withdraw from the study at any point during the study without a given reason.
- I understand that I have the right to withdraw my responses at any point without a given reason for a short period after the study has been conducted (2 weeks after participation) by contacting the researcher using the details on the participant information sheet and quoting my participant reference number.
- I agree to my consent form being securely stored by the university for 5 years.

*Providing email to enter the prize draw (once the survey is completed)*

If you would like to enter the prize draw for a £50 Amazon voucher, please add your email below:

**Participant Reference Code:** \_\_\_\_\_

Participant number: Please enter an 8 digit participant number using your date of birth (for example 20031989). You will not be asked for any personal information, and you will only be identifiable by your ID number. This will ensure confidentiality and allow data to be deleted if you withdraw.



**Debriefing Statement:**

Working at anytime, anyplace, and anywhere. How is this impacting on our well-being at work? A scale development.

You have just been asked to share your experiences when e-working remotely, away from your main company's office, at least partly of your total working hours. These experiences were linked to your well-being in the workplace.

By participating in the current study, you helped the research team to gain a greater understanding of how remote e-working links to e-workers' well-being at work. Research has suggested that employees, who are not working constantly in an office location, using technology to connect to their colleagues, are both benefited and challenged. For example, they may be more satisfied with their job because they have more flexibility and control around their job tasks but they may sometimes feel isolated from the rest of their colleagues. Since well-being at work was suggested to be a multi-dimensional phenomenon, different spheres of employees' lives have been explored: affective, professional, social, cognitive, and the physical. Part of the online survey consists of a new scale developed by the researchers aiming at assessing e-workers' well-being at work. This is an innovative piece of research because to date, organisations do not have any developed tools to monitor remote e-workers' well-being at work.

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We have tried to ensure that the questions in this study do not cause any distress. However, it is not uncommon to experience some anxieties or concerns when reflecting on your personal experiences - support is available. If participating in this study raises any concerns about your health, we recommend that you contact your GP or a Health professional. You can also seek emotional support from Samaritans ([www.samaritans.org](http://www.samaritans.org)). Samaritans is a registered charity in the UK that aims at providing

free emotional support to anyone in emotional distress through their telephone helpline 116123 or email address (jo@samaritans.org).

*For further reading on this area:*

Allen, T. D., Golden, T. D., & Shockley, K. M. (2015). How effective is telecommuting? Assessing the status of our scientific findings. *Psychological Science in the Public Interest*, 16(2), 40-68.

Charalampous, M., Grant, C. A., Tramontano, C., & Michailidis, E. (2018). Systematically reviewing remote e-workers' well-being at work: a multidimensional approach. *European Journal of Work and Organizational Psychology*, 1-23.

Grant, C. A., Wallace, L. M., & Spurgeon, P. C. (2013). An exploration of the psychological factors affecting remote e-worker's job effectiveness, well-being and work-life balance. *Employee Relations*, 35(5), 527-546.

**Thank you for your participation in this research. Your help is much appreciated!**

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## Measures used for the Main study

### Demographics

19. Age (In years)
20. Gender (1= female, 2 = male)
21. “What is your marital status?” (1= Single, 2= Married, 3= Divorced, 4= Widowed, 5= Cohabiting)
22. “Do you have any dependent children, under the age of 18?” (1 = yes, 2 = no)
  - 22.1. If yes, how many
23. Which of the following best describes your current occupation?
  - Accounting, banking and finance
  - Business, consulting and management
  - Charity and voluntary work
  - Creative arts and design
  - Energy and utilities
  - Engineering and manufacturing
  - Environment and agriculture
  - Healthcare
  - Hospitality
  - Information technology
  - Law
  - Leisure, sport and tourism
  - Marketing, advertising and PR
  - Media and publishing
  - Property and construction
  - Recruitment and HR
  - Research/Science
  - Retail
  - Sales
  - Social care
  - Teaching and education
  - Transport and logistics
  - Other (please specify)
24. Work status: “Please select from the list below the basis on which you are employed:”
  6. Part-time
  7. Full-time
  8. Self-employed
  9. Part-time student
  10. Full-time student
25. “Do you ever work extra hours, above ‘normal’ time?” (1= yes, 2= no).
  - 25.1. “If yes, please give an approximation of hours per week that you work extra.”  
(In hours)

26. "Please indicate your job level in your organisation (1 = senior management, 2 = middle-level management, 3 = first-level management, and 4 = non-management)"
27. Organisational tenure: "How long have you been working: (a) for your current organization ....."
28. Work – related ICT use frequency during working and non-working time:  
 "Considering the technology you use for work purposes (e.g., sending emails, instant messages etc)"
- (a) "How often do you use technology **during** 'normal' working hours?"
- (b) "How often do you use technology **outside** 'normal' working hours (e.g., evenings, weekends, and annual leave)?"
- (1 = Never, 2 = Rarely, 3 = Occasionally, 4 = Frequently, 5- Very frequently /all the time)
29. "How many **hours** per week do you, approximately, spend driving for work-related purposes?"
30. "How many **hours** per week do you, approximately, spend commuting by public transport for work-related purposes?"

#### **Regarding e-working:**

Instructions: "The next questions are related to your ability to e-work remotely. For the purposes of this study, remote e-working is defined as "the ability to conduct any part of your work outside your head office location (i.e., working from home, hotels, trains, cafes), at any given time, by making use of technology to stay connected to your working environment"

31. "How long have you been e-working remotely":
- (a) For your current organization.....
32. E-working intensity: "How many **hours** do you approximately e-work remotely per week?"
33. Primary work location "Please indicate an approximation of hours per week that you spend working in the following locations. In cases where you find it hard to estimate because of a variety in your work schedules, please provide an approximation of hours, for a typical week".  
 (1 = main office location, 2 = employee's home, 3 = a satellite office, 4= a client site, 5 = public transport, 6 = other, please specify location (such as cafes or hotels)
34. Turnover Intentions: How much would you agree with the statement: "I am currently not looking to move to another role" (1=Strongly disagree – 2= Disagree – 3= Neutral – 4= Agree – 5= Strongly agree).

35. Sickness absence: “How many **days**, approximately, have you been off work for health reasons the last 12 months?”

36. Social support in the workplace:

“Please indicate the extent to which you agree or disagree with each statement”

(1=Strongly disagree – 2= Disagree – 3= Neutral – 4= Agree – 5= Strongly agree).

1. I am getting on well with my co-workers
2. There is a pleasant atmosphere at my workplace
3. There is a good cohesion at the workplace
4. There are often conflicts and arguments at work

1. 71-item version of the E-Work Well-being measure (see Appendix S)

## **2. The Short Warwick-Edinburgh Mental Well-being Scale (SWEMWBS)**

Instructions “Below are some statements about feelings and thoughts. Please tick the box that best describes your experience of each over the last 2 weeks”

(5-point Likert scale) None of the time/ Rarely / Some of the time / Often / All of the time

1. I’ve been feeling optimistic about the future
2. I’ve been feeling useful
3. I’ve been feeling relaxed
4. I’ve been dealing with problems well
5. I’ve been thinking clearly
6. I’ve been feeling close to other people
7. I’ve been able to make up my own mind about things

## **3. Work-related rumination Questionnaire (WRPQ)**

Instructions: “Please indicate on a 5-point scale how frequent you engage in each of the different type of ruminative thoughts”:

(Five point Likert scale: 1 = very seldom or never, 2 = seldom, 3 = sometimes, 4 = often, 5 = very often or always)

### **Detachment**

1. Do you feel unable to switch off from work?
2. I am able to stop thinking about work-related issues in my free time
3. Do you find it easy to unwind after work?
4. I make myself switch off from work as soon as I leave
5. Do you leave work issues behind when you leave work?

## **4. Sleeping problems**

**Instructions:** “For each question, please CIRCLE the number that best describes your answer.

Please rate the CURRENT (i.e. LAST 2 WEEKS) SEVERITY of your insomnia problem(s).”

(5-point scale: None, Mild, Moderate, Severe, Very Severe)

8. Difficulty falling asleep:
9. Difficulty staying asleep:
10. Problem waking up too early:

(5point scale: Very Satisfied Satisfied Moderately Satisfied Dissatisfied Very Dissatisfied)

11. How SATISFIED/DISSATISFIED are you with your CURRENT sleep pattern?

(5point scale: Not at all Noticeable, A Little, Somewhat Much, Very Much Noticeable)

12. How NOTICEABLE to others do you think your sleep problem is in terms of impairing the quality of your life?

(5point scale: Not at all Worried A Little Somewhat Much Very Much Worried)

13. How WORRIED/DISTRESSED are you about your current sleep problem?

5point scale: Not at all Interfering A Little Somewhat Much Very Much Interfering

14. To what extent do you consider your sleep problem to INTERFERE with your daily functioning (e.g. daytime fatigue, mood, ability to function at work/daily chores, concentration, memory, mood, etc.) CURRENTLY?

## **5. The E-Work Life scale (see Appendix T)**

## **6. Health and safety issues – Ergonomics**

Instructions: “In the following section you are asked to think about the health and safety issues of the places that you are conducting your work, outside your head office environment. Health and safety issues refer to comfortable conditions in your working environment (e.g. sitting correctly) and focus on the use of the right equipment in order to avoid getting hurt when working. Please indicate how much you agree with the following statements:”

(5point Likert Scale: Strongly Disagree - Disagree - Neither agree nor disagree - Agree – Strongly Agree)

While I am remotely e-working:

7. I do not pay attention to health and safety issues while doing my job tasks
8. My organisation does not consider health and safety issues of the location(s) I am working at
9. I have not received any training and/or guidelines and tips on health and safety issues for remote workstations
10. I do not use a chair with proper lumbar support
11. I do not have a properly designed desk
12. My working environment does not enable me to have a proper sitting posture

## **7. General Self-efficacy**

Instructions: “Thinking of your daily work, how much would you agree with what the following statements describe?”

(5-point Likert scale: 1 = strongly disagree, 5 = strongly agree)

11. I can always manage to solve difficult problems if I try hard enough.
12. If someone opposes me, I can find the means and ways to get what I want.
13. It is easy for me to stick to my aims and accomplish my goals.
14. I am confident that I could deal efficiently with unexpected events.
15. Thanks to my resourcefulness, I know how to handle unforeseen situations.
16. I can solve most problems if I invest the necessary effort.
17. I can remain calm when facing difficulties because I can rely on my coping abilities.
18. When I am confronted with a problem, I can usually find several solutions.
19. If I am in trouble, I can usually think of a solution.
20. I can usually handle whatever comes my way.

## **8. Management support**

1. My manager considers teleworking (remote e-working) as a beneficial work alternative
2. My manager encourages employees to telework (e-working remotely)
3. My manager provides resources to enable teleworking (remote e-working)
4. My manager is keen to see employees telework (e-working remotely)

## **9. Technostress**

Using technology becomes an essential part of our jobs. This technology can occasionally create stress in users. Please indicate how much you agree with the statements presented below: (1- strongly agree – 5 strongly disagree)

### **Techno-overload**

1. I am forced by this technology\* to work much faster.
2. I am forced by this technology to do more work than I can handle.
3. I am forced by this technology to work with very tight time schedules.
4. I am forced to change my work habits to adapt to new technologies.



5. I have a higher workload because of increased technology complexity.

**Techno-invasion**

6. I spend less time with my family due to this technology.

7. I have to be in touch with my work even during my vacation due to this technology.

8. I have to sacrifice my vacation and weekend time to keep current on new technologies.

9. I feel my personal life is being invaded by this technology.

**Techno-complexity**

10. I do not know enough about this technology to handle my job satisfactorily.

11. I need a long time to understand and use new technologies.

12. I do not find enough time to study and upgrade my technology skills.

13. I find new recruits to this organization know more about computer technology than I do.

14. I often find it too complex for me to understand and use new technologies.

**Appendix V: E-Work-Life scale: Items descriptive statistics, factor loadings and factor correlations for the initial and final 4-factor solutions**

Items		Descriptive Statistics				Initial 4-factor solution**				Final 4-factor solution			
		Mean	SD	Sk.	Kur.	F1	F2	F3	F4	F1	F2	F3	F4
EWORk1	1. My organisation provides training in e-working skills and behaviours	3.04	1.24	.09	-1.11	.30				Removed			
EWORk2	2. My organisation trusts me to be effective in my role when I e-work remotely	1.85	.97	1.62	<b>2.83</b>	.77				.80			
EWORk3	3. I trust my organisation to provide good e-working facilities to allow me to e-work effectively	2.30	1.07	.71	-.05	.65				.70			
EWORk4	4. My manager does not micro-manage me when e-working remotely	1.90	1.04	1.26	1.18	.75				.66			
EWORk5	5. I trust my manager to provide me with career professional developmental opportunities when e-working remotely	2.47	1.07	.54	-.22	.66				.68			
EWORk6	6. When I'm not visible e-working remotely, my manager trusts me to work effectively	1.88	.99	1.31	1.53	.83				.75			
EWORk7	7. My manager gives me total control over when and how I get my work completed when e-working	2.13	1.13	.98	.30		.77			Removed			
EWORk8	8. My work is so flexible I could easily take time off e-working remotely, if and when I want to	2.57	1.23	.36	-.88		.74				.77		

EWOR9	9. My manager allows me to flex my hours to meet my needs, providing all the work is completed	2.26	1.18	.82	-.16		86				.84		
EWOR10	10. There are no constraints on the location where I work providing I complete my role effectively	2.44	1.26	.54	-.84		73				.74		
EWOR11	11. I work flexible hours across the day breaking down my hours to suit my work and non-work commitments	2.67	1.24	.26	-1.03		.71				.75		
EWOR12	12. My e-working does not take up time that I would like to spend with my family/friends or on other non-work activities	2.52	1.07	.41	-.64			.70				.70	
EWOR13	13. When e-working remotely I do not often think about work-related problems outside of my normal working hours	2.88	1.14	.03	-1.07			.68				.68	
EWOR14	14. I am happy with my work life balance when e-working remotely	2.27	1.05	.71	-.07			.82				.83	
EWOR15	15. Constant access to work through e-working is not very tiring	2.80	1.09	.07	-.87			.67				.67	
EWOR16	16. When e-working from home I do know when to switch off so that I can recuperate effectively	2.47	1.09	.50	-.58			.61				.61	
EWOR17	17. My relationships suffer when I am e-working remotely*	3.74	1.07	-.67	-.31			-.49				-.49	
EWOR18	18. When e-working I can concentrate better on my work tasks	2.18	.96	.66	.07				.75				.72
EWOR19	19. E-working makes me more effective to deliver against my key objectives and deliverables	2.15	.94	.64	.02				.87				.86

EWOR20	20. If I am interrupted when working from home I still meet my manager's quality expectations	1.97	.82	.82	.79				.60				.60
EWOR21	21. My overall job productivity has increased by my ability to e-work remotely/from home	2.08	.95	.75	.216				.83				.81
EWOR22	22. I can cope with work demands more effectively when I e-work remotely	2.09	.96	.69	-.021				.89				.88
									Factor correlations				
									F1	1.00			
									F2	.66	1.00		
									F3	.43	.34	1.00	
									F4	.34	.33	.44	1.00

Note: Sk.=skewness; Kur.=kurtosis

\*items that are reverse scored.

\*\*The Factors are named:

F1 = Organisational Trust, 5 items

F2 = Flexibility, 4 items

F3 = Work-Life Interference, 6 items

F4 = Effectiveness/Productivity, 5 items

## Appendix W: Main study -Control checks

Independent sample t-tests between gender and outcome variables examined.						
Outcome variable		M	SE	<i>t</i>	df	<i>p</i>
Work demands	Female	3.23	.04	.96	397	.34
	Male	3.17	.05			
Job satisfaction	Female	3.76	.06	-.06	397	.95
	Male	3.77	.07			
Emotional exhaustion	Female	3.02	.06	1.76	397	.08
	Male	2.85	.07			
Organisational commitment	Female	3.79	.06	-.85	397	.39
	Male	3.86	.06			
Cognitive weariness	Female	2.63	.05	.93	397	.35
	Male	2.56	.05			
Negative emotions	Female	2.42	.05	1.56	397	.12
	Male	2.32	.05			
Positive emotions	Female	3.44	.05	-.53	397	.6
	Male	3.48	.05			
Relationships with colleagues	Female	3.69	.06	-.79	397	.43
	Male	3.75	.06			
Relationship with supervisor	Female	3.91	.06	-1.19	397	.23
	Male	4.01	.06			
Social Isolation	Female	2.42	.06	1.11	397	.27
	Male	2.32	.06			

Autonomy	Female	4.03	.04	1.01	397	.31
	Male	3.96	.05			
Competence	Female	4.39	.04	.71	397	.48
	Male	4.35	.04			
Career development	Female	3.38	.07	-1.72	397	.09
	Male	3.55	.06			
Psychosomatic well-being (overall)	Female	2.57	.06	2.57	397	<b>.01</b>
	Male	2.35	.06			
Psychosomatic fatigue	Female	2.51	.06	1.37	397	.17
	Male	2.38	.07			
Psychosomatic musculoskeletal	Female	2.62	.06	2.99	397	<b>.01</b>
	Male	2.33	.07			
Positive mental health	Female	3.51	.05	-.74	397	.46
	Male	3.57	.05			
Detachment from work	Female	3.14	.06	-.11	397	.92
	Male	3.15	.07			
Sleep problems	Female	2.21	.05	-.64	397	.53
	Male	2.26	.07			
Ergonomics	Female	2.9	.06	2.53	397	<b>.01</b>
	Male	2.65	.07			
Self-efficacy	Female	3.92	.04	.24	397	.81
	Male	3.91	.04			
Manager support with remote e-working	Female	3.55	.06	.21	397	.84
	Male	3.53	.07			

Technology overload	Female	2.73	.06	.05	397	.96
	Male	2.73	.07			
Technology invasion	Female	2.34	.06	-.46	397	.64
	Male	2.39	.08			
Technology complexity	Female	2.19	.06	.93	397	.35
	Male	2.11	.07			
Organisational trust	Female	2.11	.06	.75	397	.45
	Male	2.05	.06			
Flexibility	Female	2.5	.07	.32	397	.75
	Male	2.46	.07			
Work Life Interference	Female	2.78	.04	.14	397	.89
	Male	2.78	.05			
Job effectiveness	Female	2.03	.05	-2.05	397	<b>.04</b>
	Male	2.19	.06			

**ANOVAs to test differences between the main work locations**

Outcome variable		M	SE	F	Sig
Work demands	Main office	3.24	.04	1.04	.35
	Home	3.15	.06		
	Other location	3.14	.1		
Job satisfaction	Main office	3.65	.06	5.78	<b>.01</b>
	Home	4	.08		
	Other location	3.91	.13		
Emotional exhaustion	Main office	2.98	.06	1.45	.24
	Home	2.81	.1		
	Other location	3.08	.14		
Organisational commitment	Main office	3.81	.05	.23	.80
	Home	3.86	.09		
	Other location	3.76	.14		
Cognitive weariness	Main office	2.64	.05	1.35	.26
	Home	2.49	.08		
	Other location	2.63	.12		
Negative emotions	Main office	2.3	.04	5.58	<b>.01</b>
	Home	2.51	.08		
	Other location	2.58	.11		
Positive emotions	Main office	3.42	.05	1.97	.14
	Home	3.59	.07		
	Other location	3.42	.1		
Relationships with colleagues	Main office	3.75	.05	.94	.39
	Home	3.62	.09		
	Other location	3.71	.13		
Relationship with supervisor	Main office	3.96	.05	0	1
	Home	3.95	.1		
	Other location	3.95	.11		
Social Isolation	Main office	2.33	.05	1.42	.24
	Home	2.51	.11		
	Other location	2.33	.12		
Autonomy	Main office	3.98	.04	.66	.52
	Home	4.07	.08		
	Other location	4.03	.12		
Competence	Main office	4.34	.04	1.21	.30
	Home	4.43	.06		
	Other location	4.45	.08		
Career development	Main office	3.48	.06	.34	.71
	Home	3.41	.1		
	Other location	3.38	.16		
Psychosomatic conditions overall	Main office	2.43	.05	1.86	.16
	Home	2.51	.09		
	Other location	2.7	.13		
Psychosomatic fatigue	Main office	2.4	.06	3.14	<b>.04</b>
	Home	2.47	.09		
	Other location	2.77	.14		
Psychosomatic musculoskeletal	Main office	2.45	.06	.87	.42
	Home	2.54	.1		
	Other location	2.64	.15		



Positive mental health	Main office	3.58	.04	1.65	.19
	Home	3.43	.08		
	Other location	3.48	.11		
Detachment from work	Main office	3.17	.05	1.2	.30
	Home	3.19	.08		
	Other location	2.96	.14		
Sleep problems	Main office	2.24	.05	1.14	.32
	Home	2.15	.09		
	Other location	2.38	.12		
Ergonomics	Main office	2.77	.06	.34	.71
	Home	2.82	.1		
	Other location	2.89	.16		
Self-efficacy	Main office	3.91	.03	.46	.63
	Home	3.89	.06		
	Other location	3.98	.09		
Manager support with remote e-working	Main office	3.41		8.66	<b>.01</b>
	Home	3.85	.05		
	Other location	3.59	.09		
Technology overload	Main office	2.75	.15	.28	.76
	Home	2.7	.1		
	Other location	2.66	.12		
Technology invasion	Main office	2.35	.06	.84	.43
	Home	2.46	.12		
	Other location	2.24	.13		
Technology complexity	Main office	2.21	.06	1.31	.27
	Home	2.09	.09		
	Other location	2.01	.12		
Organisational trust	Main office	2.09	.05	.53	.59
	Home	2.02	.09		
	Other location	2.17	.14		
Flexibility	Main office	2.57	.06	4.75	<b>.01</b>
	Home	2.2	.1		
	Other location	2.55	.19		
Work life interference	Main office	2.77	.04	.06	.95
	Home	2.79	.07		
	Other location	2.81	.09		
Job effectiveness	Main office	2.18	.05	4.65	<b>.01</b>
	Home	1.9	.08		
	Other location	2.06	.09		

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*Note:* Degrees of freedom (df) are 199 for all ANOVAs run

**Multiple Comparisons - Tukey post hoc indicating significant differences between different locations.**

Dependent Variable			Mean Difference	Std. Error	Sig.
Job satisfaction	<b>1.00</b>	<b>2.00</b>	<b>-.35</b>	<b>.11</b>	<b>.01</b>
		3.00	-.2	.15	.19
	2.00	1.00	.35	.11	.01
		3.00	.09	.17	.85
	3.00	1.00	.26	.15	.19
		2.00	-.0	.17	.85
Negative emotions	<b>1.00</b>	<b>2.00</b>	<b>-.21</b>	<b>.08</b>	<b>.03</b>
		3.00	-.28	.11	.03
	2.00	1.00	.21	.08	.03
		3.00	-.0	.12	.83
	<b>3.00</b>	<b>1.00</b>	<b>.28</b>	<b>.11</b>	<b>.03</b>
		2.00	.07	.12	.83
Fatigue	1.00	2.00	-.0	.11	.77
		3.00	-.37	.15	.03
	2.00	1.00	.07	.11	.77
		3.00	-.2	.17	.18
	<b>3.00</b>	<b>1.00</b>	<b>.37</b>	<b>.15</b>	<b>.03</b>
		2.00	.29	.17	.18
Managerial support with remote e-working	<b>1.00</b>	<b>2.00</b>	<b>-.43</b>	<b>.11</b>	<b>.01</b>
		3.00	-.1	.14	.43
	2.00	1.00	.43	.11	.01
		3.00	.26	.16	.23
	3.00	1.00	.17	.14	.43
		2.00	-.2	.16	.23
Flexibility	<b>1.00</b>	<b>2.00</b>	<b>.37</b>	<b>.12</b>	<b>.01</b>
		3.00	.02	.16	.99
	2.00	1.00	-.37	.12	.01
		3.00	-.3	.18	.15
	3.00	1.00	-.0	.16	.99
		2.00	.34	.18	.15
Effectiveness	<b>1.00</b>	<b>2.00</b>	<b>.28</b>	<b>.09</b>	<b>.01</b>
		3.00	.11	.12	.60
	2.00	1.00	-.27	.09	.01
		3.00	-.1	.14	.49
	3.00	1.00	-.1	.12	.60
		2.00	.15	.14	.49

Notes: 1 = Office as the main work location; 2 = Home as the main work location;  
3 = Main work location as other (e.g., client site).

Correlations between control and outcome variables

	Extra hours worked	Hours e-work per week
Work demands	.03	.03
Job satisfaction	.01	<b>.26**</b>
Emotional exhaustion	.01	-.03
Organisational commitment	0	.07
Cognitive weariness	-.01	0
Negative emotions	0	<b>.16**</b>
Positive emotions	-.05	<b>.14**</b>
Relationships with colleagues	-.04	0
Relationship with supervisor	-.06	0
Social Isolation	.02	.09
Autonomy	.01	<b>.14**</b>
Competence	.01	<b>.15**</b>
Career development	.05	.02
Psychosomatic conditions overall	.02	.06
Psychosomatic fatigue	.03	.06
Psychosomatic musculoskeletal	.01	.05
Positive mental health	-.05	-.01
Detachment from work	-.03	-.05
Sleep problems	.06	.01
Ergonomics	0	.02
Self-efficacy	.01	.04
Managerial support when e-working remotely	.01	<b>.25**</b>
Technology overload	.03	-.01
Technology invasion	.09	.05
Technology complexity	.02	-.06
Organisational trust	.02	-.06
Flexibility	-.03	<b>-.18**</b>
Work life interference	.04	-.02
Job effectiveness	.05	<b>-.22**</b>

**Appendix X: 71-item E-Work Well-being: Means, standard deviations, skewness and kurtosis of the items**

		<i>M</i>	<i>SD</i>	Skewness	Kurtosis
<b>Affective dimension</b>					
Positive emotions	Bored	2.43	.99	.21	-.41
	Happy	3.58	.83	-.49	.53
	Sad	1.97	.86	.78	.48
	Frustrated	2.72	.99	.18	-.33
	Relaxed	3.59	.97	-.49	-.12
	At ease	3.73	.95	-.68	.36
	Stressed	2.77	.99	.18	-.40
	Grateful	3.51	1.12	-.63	-.20
	Guilty	1.98	1.05	.87	-.09
Job satisfaction	Not being confined into an office or a single place/ location	3.93	1.11	-.82	-.19
	Determining when you come to the office and when you do not	3.75	1.25	-.70	-.57
	Balancing your personal and working life	3.76	1.18	-.69	-.44
	Having the peace to reflect on your work	3.62	1.20	-.63	-.46
Emotional exhaustion	I feel emotionally exhausted when I receive too many emails and instant messages from colleagues	2.86	1.11	.14	-.69
	I feel used up when I always have my devices switched on	2.67	1.08	.18	-.62

	I feel fatigued when I am overworking	3.30	1.07	-.27	-.40
	I feel burned out when people expect me to be constantly available using technology	2.92	1.24	.02	-.98
	I feel strained when my use of information and communication technologies takes time away from my personal life	2.99	1.13	-.07	-.72
Organisational commitment	I feel as if I am part of the organisation	3.83	1.01	-1.00	.72
	I am willing to go the extra mile for my organisation	3.87	1.00	-.91	.52
	I want to put significant effort on behalf of my organisation	3.90	.95	-.98	.94
	I find it easy to identify with my organisations' norms and values	3.67	1.07	-.68	-.04
	I am proud that I am part of this organisation	3.81	1.06	-.79	.07
Cognitive well-being	I find it hard to concentrate on my work activities"	2.53	.92	.39	.16
	I find it difficult to take in new information when I am working on a job task	2.21	.80	.71	.99
	Receiving emails and instant messages decreases my concentration	2.95	1.07	.07	-.57
	I cannot think clearly about work tasks when I receive too many emails and instant messages from colleagues	2.90	1.09	.07	-.76
	My thinking is interrupted when I receive too many emails and instant messages from colleagues	3.01	1.06	-.10	-.62
	Working across multiple locations affects my ability to think clearly about work tasks	2.02	.96	.91	.51

<b>Social wellbeing</b>					
Relationship with colleagues	I find it easy to exchange ideas and connect to my colleagues	3.55	1.00	-.76	.05
	I am happy with the amount of face-to-face contact I have with my colleagues	3.71	1.01	-.72	-.11
	I am happy with the quality of my social interactions with colleagues	3.65	1.00	-.78	.06
	My colleagues and I have a good communication regardless of where we are located	3.80	1.02	-.91	.38
	I have good relationships with my office-based colleagues regardless of the time we spend away from each other	3.87	.95	-.90	.75
Relationship with supervisor	My supervisor understands my problems and needs regardless of whether I am physically present or not	3.73	1.04	-.93	.43
	My supervisor clearly communicates what is expected of me	3.72	1.02	-.85	.28
	My supervisor appreciates and acknowledges the work that I am doing	3.89	1.05	-1.13	1.01
	My supervisor trusts me to undertake my job tasks in any location	4.31	.84	-1.60	3.27
	My supervisor and I have a good relationship regardless of whether I am physically present or not	4.11	.94	-1.21	1.55
Social isolation	I feel isolated when I am not around my colleagues on a regular basis	2.40	1.07	.51	-.30

	I am not included in social activity at work with colleagues	2.42	1.18	.62	-.46
	I feel I am not always counted as a valuable team member	2.09	1.15	.88	-.10
	I have fewer opportunities to interact with colleagues than I would like	2.43	1.16	.54	-.54
	I feel I do not have somebody to bounce ideas off	2.53	1.20	.44	-.65
<b>Professional well-being</b>					
Autonomy	I feel empowered to decide what the best way is to get my job done	4.13	.78	.96	1.38
	I have the ability to negotiate what I am expected to accomplish	3.82	.95	-.82	0.43
	I have the autonomy to complete my job tasks at any time	3.93	.91	-.92	0.77
	I am enabled to prioritise my work tasks	4.13	.82	-.99	1.17
	I have the autonomy to decide where to conduct my work activities	4.01	.91	-.86	0.49
Competence	Overall, I am competent to do my job	4.43	.68	-1.30	3.03
	I am meeting my goals and targets, even when I am not physically with people from my organisation	4.35	.74	-1.35	2.96
	I resolve work-related issues that may arise by using information and communication technologies (such as emails, calls and instant messages)	4.35	.73	-1.12	1.80

	I have the essential IT knowledge, skills and abilities to solve any issues while I am not working in an office environment.	4.36	.792	-1.37	2.24
	I effectively communicate with people using information and communication technologies	4.40	.695	-1.14	1.75
Career development	I am in contact with to the right people in the organisation who could help me in getting promoted	3.40	1.093	-.48	-.40
	I receive constructive feedback that I need to develop professionally	3.45	1.045	-.51	-.32
	I feel that I am receiving all the relevant information that may enhance my work-related skills	3.44	1.089	-.58	-.39
	I feel that I am acknowledged regarding career opportunities that come up in my organisation	3.44	1.096	-.50	-.41
	My organisation understands that people working remotely need adequate career opportunities	3.54	1.097	-.54	-.31
<b>Psychosomatic well-being</b>					
Musculoskeletal	I have suffered from shoulder pains	2.41	1.251	.46	-.87
	I suffered from pain in my lower limbs such as feet, thighs and hips	2.15	1.169	.77	-.37
	My joints felt sore	2.27	1.169	.65	-.37
	I experienced neck pains	2.63	1.227	.26	-.83
	I experienced back pain	2.72	1.206	.27	-.70



	I experienced discomfort in my eyes (e.g., sore, tired or dry eyes) I had problems with my sleep	2.80	1.162	.18	-.76
Fatigue	I had problems with my sleep	2.62	1.266	.37	-.82
	I felt very tired and/or fatigued	2.86	1.181	.26	-.75
	I had constant headaches and/or migraines	1.93	1.068	1.03	.36
	I lack energy for work	2.41	1.088	.51	-.40

**Appendix Y: E-Work Well-being item loadings and first-order factor loadings (five-factor oblique model)**

		Factor loadings	First-order factor loadings
<b>Affective dimension</b>			
Positive emotions	Bored	.52	.77
	Happy	-.58	
	Sad	.66	
	Frustrated	.64	
	Relaxed	-.62	
	At ease	-.62	
	Stressed	.65	
	Grateful	-.45	
	Guilty	.49	
Job satisfaction	Not being confined into an office or a single place/ location	.56	.46
	Determining when you come to the office and when you do not	.51	
	Balancing your personal and working life	.77	
	Having the peace to reflect on your work	.81	
Emotional exhaustion	I feel emotionally exhausted when I receive too many emails and instant messages from colleagues	.76	.70
	I feel used up when I always have my devices switched on	.81	
	I feel fatigued when I am overworking	.80	
	I feel burned out when people expect me to be constantly available using technology	.89	
	I feel strained when my use of information and communication technologies takes time away from my personal life	.84	
	I feel as if I am part of the organisation	.76	.51

Organisational commitment	I am willing to go the extra mile for my organisation	.82	
	I want to put significant effort on behalf of my organisation	.82	
	I find it easy to identify with my organisations' norms and values	.80	
	I am proud that I am part of this organisation	.87	
Cognitive well-being	I find it hard to concentrate on my work activities"	.46	
	I find it difficult to take in new information when I am working on a job task	.59	
	Receiving emails and instant messages decreases my concentration	.87	
	I cannot think clearly about work tasks when I receive too many emails and instant messages from colleagues	.93	
	My thinking is interrupted when I receive too many emails and instant messages from colleagues	.90	
	Working across multiple locations affects my ability to think clearly about work tasks	.48	
Social wellbeing			
Relationship with colleagues	I find it easy to exchange ideas and connect to my colleagues	.73	.77
	I am happy with the amount of face-to-face contact I have with my colleagues	.67	
	I am happy with the quality of my social interactions with colleagues	.77	
	My colleagues and I have a good communication regardless of where we are located	.83	
	I have good relationships with my office-based colleagues regardless of the time we spend away from each other	.74	
Relationship with supervisor	My supervisor understands my problems and needs regardless of whether I am physically present or not	.85	.80

	My supervisor clearly communicates what is expected of me	.75	
	My supervisor appreciates and acknowledges the work that I am doing	.90	
	My supervisor trusts me to undertake my job tasks in any location	.71	
	My supervisor and I have a good relationship regardless of whether I am physically present or not	.84	
Social isolation	I feel isolated when I am not around my colleagues on a regular basis	.70	-.53
	I am not included in social activity at work with colleagues	.55	
	I feel I am not always counted as a valuable team member	.63	
	I have fewer opportunities to interact with colleagues than I would like	.83	
	I feel I do not have somebody to bounce ideas off	.81	
<b>Professional well-being</b>			
Autonomy	I feel empowered to decide what the best way is to get my job done	.77	.72
	I have the ability to negotiate what I am expected to accomplish	.74	
	I have the autonomy to complete my job tasks at any time	.72	
	I am enabled to prioritise my work tasks	.77	
	I have the autonomy to decide where to conduct my work activities	.63	
Competence	Overall, I am competent to do my job	.70	.61
	I am meeting my goals and targets, even when I am not physically with people from my organisation	.75	
	I resolve work-related issues that may arise by using information and communication technologies (such as emails, calls and instant messages)	.74	
	I have the essential IT knowledge, skills and abilities to solve any issues while I am not working in an office environment.	.58	

	I effectively communicate with people using information and communication technologies	.73	
Career development	I am in contact with to the right people in the organisation who could help me in getting promoted	.77	.71
	I receive constructive feedback that I need to develop professionally	.84	
	I feel that I am receiving all the relevant information that may enhance my work-related skills	.89	
	I feel that I am acknowledged regarding career opportunities that come up in my organisation	.85	
	My organisation understands that people working remotely need adequate career opportunities	.78	
<b>Psychosomatic well-being</b>			
Musculoskeletal	I have suffered from shoulder pains	.80	.72
	I suffered from pain in my lower limbs such as feet, thighs and hips	.71	
	My joints felt sore	.74	
	I experienced neck pains	.86	
	I experienced back pain	.82	
	I experienced discomfort in my eyes (e.g., sore, tired or dry eyes) I had problems with my sleep	.57	
Fatigue	I had problems with my sleep	.74	.99
	I felt very tired and/or fatigued	.88	
	I had constant headaches and/or migraines	.60	
	I lack energy for work	.77	

**Appendix Z: E-Work Well-being item loadings and first-order factor loadings (three-factor oblique model)**

		Item loadings	First-order factor loadings
<b>Individual dimension (affective &amp; cognitive well-being)</b>			
Positive emotions	Bored	.52	.89
	Happy	-.58	
	Sad	.66	
	Frustrated	.64	
	Relaxed	-.62	
	At ease	-.62	
	Stressed	.65	
	Grateful	-.45	
	Guilty	.49	
Job satisfaction	Not being confined into an office or a single place/ location	.56	.50
	Determining when you come to the office and when you do not	.51	
	Balancing your personal and working life	.77	
	Having the peace to reflect on your work	.81	
Emotional exhaustion	I feel emotionally exhausted when I receive too many emails and instant messages from colleagues	.76	.66
	I feel used up when I always have my devices switched on	.81	
	I feel fatigued when I am overworking	.80	
	I feel burned out when people expect me to be constantly available using technology	.89	
	I feel strained when my use of information and communication technologies takes time away from my personal life	.84	

<b>Cognitive well-being</b>	I find it hard to concentrate on my work activities”	.46	.55
	I find it difficult to take in new information when I am working on a job task	.59	
	Receiving emails and instant messages decreases my concentration	.87	
	I cannot think clearly about work tasks when I receive too many emails and instant messages from colleagues	.93	
	My thinking is interrupted when I receive too many emails and instant messages from colleagues	.90	
	Working across multiple locations affects my ability to think clearly about work tasks	.48	
<b>Interaction between individual and the organisation</b>			
Organisational commitment	I feel as if I am part of the organisation	.76	.76
	I am willing to go the extra mile for my organisation	.82	
	I want to put significant effort on behalf of my organisation	.82	
	I find it easy to identify with my organisations’ norms and values	.80	
	I am proud that I am part of this organisation	.87	
Relationship with colleagues	I find it easy to exchange ideas and connect to my colleagues	.73	.68
	I am happy with the amount of face-to-face contact I have with my colleagues	.67	
	I am happy with the quality of my social interactions with colleagues	.77	
	My colleagues and I have a good communication regardless of where we are located	.83	
	I have good relationships with my office-based colleagues regardless of the time we spend away from each other	.74	

Relationship with supervisor	My supervisor understands my problems and needs regardless of whether I am physically present or not	.85	.81
	My supervisor clearly communicates what is expected of me	.75	
	My supervisor appreciates and acknowledges the work that I am doing	.90	
	My supervisor trusts me to undertake my job tasks in any location	.71	
	My supervisor and I have a good relationship regardless of whether I am physically present or not	.84	
Social isolation	I feel isolated when I am not around my colleagues on a regular basis	.70	-.40
	I am not included in social activity at work with colleagues	.55	
	I feel I am not always counted as a valuable team member	.63	
	I have fewer opportunities to interact with colleagues than I would like	.83	
	I feel I do not have somebody to bounce ideas off	.81	
Autonomy	I feel empowered to decide what the best way is to get my job done	.77	.70
	I have the ability to negotiate what I am expected to accomplish	.74	
	I have the autonomy to complete my job tasks at any time	.72	
	I am enabled to prioritise my work tasks	.77	
	I have the autonomy to decide where to conduct my work activities	.63	
Competence	Overall, I am competent to do my job	.70	.61
	I am meeting my goals and targets, even when I am not physically with people from my organisation	.75	
	I resolve work-related issues that may arise by using information and communication technologies (such as emails, calls and instant messages)	.74	
	I have the essential IT knowledge, skills and abilities to solve any issues while I am not working in an office environment.	.58	



	I effectively communicate with people using information and communication technologies	.73	
Career development	I am in contact with to the right people in the organisation who could help me in getting promoted	.77	.77
	I receive constructive feedback that I need to develop professionally	.84	
	I feel that I am receiving all the relevant information that may enhance my work-related skills	.89	
	I feel that I am acknowledged regarding career opportunities that come up in my organisation	.85	
	My organisation understands that people working remotely need adequate career opportunities	.78	
Physical Health			
Musculoskeletal	I have suffered from shoulder pains	.80	.74
	I suffered from pain in my lower limbs such as feet, thighs and hips	.71	
	My joints felt sore	.74	
	I experienced neck pains	.86	
	I experienced back pain	.82	
	I experienced discomfort in my eyes (e.g., sore, tired or dry eyes) I had problems with my sleep	.57	
Fatigue	I had problems with my sleep	.74	1.068
	I felt very tired and/or fatigued	.88	
	I had constant headaches and/or migraines	.60	
	I lack energy for work	.77	