

Need satisfaction in the new work context

A quantitative investigation of telework extent's impact on basic need satisfaction

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Abstract: The modern workplace is undergoing profound changes. Remote working practices, here referred to as telework, has seen rapid and widespread adoption as governments and organisations across the world enacted pandemic safety measures. Now telework is increasingly seen as "the new normal" and while it has been subject of academic studies before, findings have been paradoxical and inconsistent. Additionally, the contextual relevance of these is increasingly being put into question. In an environment otherwise characterised by uncertainty, it is argued that the basic needs as suggested by Self-Determination theory are equipped to provide a focused area of inquiry allowing for new perspectives on telework, and its implications for employees. Accordingly, this thesis aims to study to what degree the extent of telework affects the satisfaction of the basic psychological needs, autonomy, competence and relatedness and how individual differences moderate these relationships. Little to no past research has utilised Self-Determination theory as a theoretical frame within telework. In general, telework literature has failed to properly consider the presence of choice. There has also been a dichotomisation of employees, comparing them as either teleworker or office worker instead of considering the actual telework extent. Through a quantitative study utilizing a survey format we collected data from 218 respondents for further analysis. The main findings confirm a positive relationship between telework extent and autonomy satisfaction, and negative implications on relatedness satisfaction. Further, it is found that autonomy satisfaction can additionally be explained by choice, where the employer provides the employee with the option of telework thus increasing employee flexibility. The study further emphasises the need for future research on individual differences in need satisfaction in the teleworking context and for necessary scale development to properly measure basic needs in the telework context.

Keywords: basic need satisfaction, autonomy, competence, relatedness, telework

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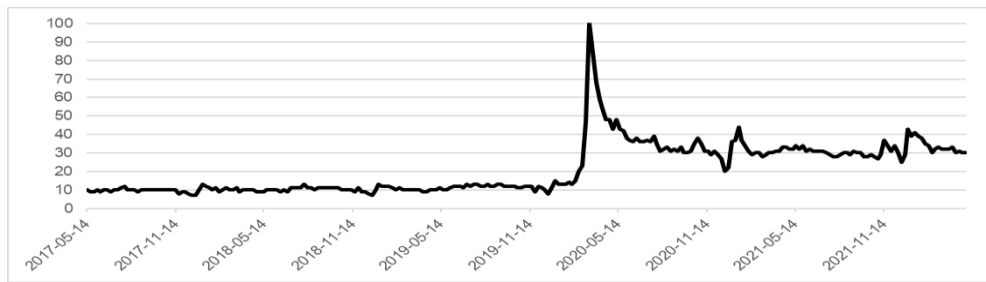
1. Introduction

1.1. Background

Profound changes are taking place in the modern workplace. Beginning in early 2020, as the world was coming to grips with an ensuing pandemic, governments were increasingly realising the need for spatial distancing as safety measures. Organisations across the world were shocked, having to quickly adapt to this new reality. In this manner, the Covid-19 pandemic has necessitated the widespread adoption of practices that allow for spatial detachment of work activities from central work premises (Belzunegui-Eraso & Erro-Garcés, 2020; Galanti et al., 2021). Put differently, this sudden and sustained event has thrust organisational reality into areas of uncertainty and has been likened to as the “most extensive mass teleworking experiment in history” (Loia & Adinolfi, 2021). Sometimes referred to as “the new normal”, it is implied that remote work will have an enduring post pandemic presence (Barrero et al., 2020; Delany, 2021)¹. While not widespread, remote working practices had seen steady growth over many years before the pandemic (Felstead & Henseke, 2017; Kossek & Lautsch, 2018). Remote working is not a new concept (van Meel, 2011), and it has been the subject of study (Allen et al., 2015; Gajendran & Harrison, 2007) from varying disciplines.

Interest in the topic of remote work increased dramatically in early 2020 (Figure 1). Due to the unprecedented nature of the Covid-19 pandemic one may question the contextual relevance of past academic literature (Pass & Ridgway, 2022; Wang et al., 2021). This existing body of work has also increasingly been pointed out to be characterised by inconsistent and paradoxical findings (Allen et al., 2015; Boell et al., 2016; Delanoeije & Verbruggen, 2020). As such, the existing literature is likely ill-equipped to properly gauge the implications of present-day telework. The need for new perspectives and more research is now greater than ever, especially regarding the implications for employees. Accordingly, in this thesis it will be argued that the basic needs as suggested by the Self-Determination theory (Ryan & Deci, 2017) is equipped to provide a focused area of research inquiry in an environment otherwise characterised by uncertainty.

¹ Paper by Barrero et al. (2020) is a working paper.



Note: This is based on Google Trends data, where 100 reflects maximum interest of the search topic.

Figure 1. Worldwide relative search interest for remote work over the past 5 years.

1.1.1 Defining telework

Currently, no universally accepted definition of remote working practices, or “telework”, exists (Belzunegui-Eraso & Erro-Garcés, 2020), leading to challenges in reviewing available research because of the usage of various conceptualisations, terminologies and varying emphases within different research disciplines (Allen et al., 2015). The International Labour Organisation, ILO, (Eurofound and the International Labour Office, 2017) defines telework as:

“The use of information and communications technologies (ICT), such as smartphones, tablets, laptops and/or desktop computers, for work that is performed outside the employer’s premises.”

Telework is however not a new concept (Nilles, J., 1975), with flexible and mobile ways of working conceptually well established in the 1970s (Nilles, Jack M., 1988; van Meel, 2011) as visions of what new technology would imply for the knowledge worker. Acknowledging this, Messenger & Gschwind (2016) argue that “today's location-independent, technology-enabled new ways of working [...] are all part of the same revolution in the inter-relationship between paid work and personal life.”. As such, in Messenger & Gschwind’s view terms such as flexible workplace, hybrid work, telecommuting, remote work, e-working, and work from home can in a general sense all be related to the spatial detachment from the traditional office space that has been enabled gradually by improvements in ICT. This view is shared by Allen et al. (2015) who arrived at the following definition of the related term telecommuting² (2015, p.44):

“Telecommuting is a work practice that involves members of an organisation substituting a portion of

² Telecommuting is considered a narrower term than teleworking by Allen et al. (2015). In the US teleworking also includes work from telecenters, call centres and home-based businesses. However, it is acknowledged that telework as a term is more frequently used in European and Australian literature to mean the same thing as telecommuting does in American literature.

their typical work hours [...] to work away from a central workplace—typically principally from home—using technology to interact with others as needed to conduct work tasks.”

Thus, both the ILO’s and Allen et al.’s definitions encapsulate a suitable contemporary view of the concept which also acknowledges the impact of 21st Century ICT developments. Further, Allen et al. (2015) pointed out that several definitions encountered lacked considerations of the extent of teleworking. Making a distinction between the extent of telework is important to ensure a systematic perspective within this research domain (Belzunegui-Eraso & Erro-Garcés, 2020). Moreover, the ILO’s definition of telework is much like Allen et al.’s definition of telecommuting. Neither includes telecenters, call-centres or home-based businesses (Allen et al., 2015; Eurofound and the International Labour Office, 2017). In short, these terms differ due to geographical differences in language rather than due to a difference in their meaning.

The widespread usage of different conceptualisations and terminology within the field warrants attention when reviewing past literature and when using the terminology. Accordingly, it is the ILO definition of telework and Allen et al.’s definition of telecommuting that will serve as a reference point going forward. Of the two, this thesis will use the term “teleworking” to denote the concept.

Going forward in this thesis, two work contexts are acknowledged: 1) the telework³ context and office-based context. If these two contexts are combined, it is considered a hybrid mode of working. The extent of teleworking is measured as a percentage on a weekly basis as this is deemed a normal time frame in which one plans and conducts one’s work activities.

1.1.2 The emergence of telework

In general, the role of technology as an enabler of telework is well established, but it is not the sole driver of its emergence (Baruch & Nicholson, 1997; Belzunegui-Eraso & Erro-Garcés, 2020; Messenger & Gschwind, 2016). In the US context, environmental and economic concerns were early drivers of telework. During the 70s, with the ongoing oil crisis and urbanisation, telework was seen as one way in which traffic problems could be alleviated, energy consumption reduced and thereby also reducing the commuting time for employees (Allen et al., 2015; Belzunegui-Eraso & Erro-Garcés, 2020; Nilles, 1988), advantages which are still highly present and discussed as a major motivator for teleworking (Elldér, 2020; Fischer et al., 2021; Wang, K. & Ozbilen, 2020). Starting in the 70s, teleworking also emerged as an opportunity to attract key employees scarce in supply (Allen et al., 2015; Avery & Zabel, 2000), which arguably will never be an irrelevant concern of employers. From the 80s and onwards, rapid technological developments in parallel with the growth of the information

³ Teleworking here includes working from home and other places physically detached from the office.

economy made more jobs suitable for this work arrangement (Kizza, 2017). Today, the wave of telework implementation has largely been driven by the pandemic. The result of previous development is what essentially made the adoption of telework today possible.

However, there are some important factors to take into account when considering whether a job can be performed in a teleworking context. Baruch & Nicholson (1997) acknowledges the following four factors: The job, which considers the nature of work and the technological fit towards the work role; the organisation, relating to the extent of support from the business culture as well as willingness and trust from management towards teleworkers; the home/work interface, including quality of family relations as well as the availability of proper physical spaces; and finally, the individual including personal attitude, values, norms, qualities and needs and their fit to teleworking (Baruch, 2001). Recently, a fifth factor consisting of “environmental, safety and legal” has been suggested to be added to this framework. This factor acknowledges regulatory environmental factors, but also the pandemic’s health risks that have encouraged the heavy adoption of telework (Belzunegui-Eraso & Erro-Garcés, 2020). The influence of the regulatory environment towards teleworking is still of relevance, as the lack of a regulatory framework has been brought up to explain a slow diffusion of telework practices and a significant hindrance in its implementation (Prosser, 2011; Pyöriä, 2011). Given the current situation caused by the pandemic, there have been calls for due diligence of the current protection of workers and calls of legal reforms to consider the challenges that the new modes of working have brought, including the right to disconnect but also if the mode of telework should be a workers’ right (Dobbins, 2021; Müller, 2021). Thus, the quick adoption of teleworking has brought up new concerns to the surface, concerns based on an uncertainty of the outcomes of the teleworker. As such, it is presently of great relevance to highlight the outcomes the teleworking context has on employees.

1.1.3 Defining and problematising outcomes of telework

Research that examines the relationship between the use of telework and various outcomes has been approached from various fields, ranging from psychology and management to transportation, and is rather abundant. Of interest has been to examine the impact on the relatedness factors such as relationships (Golden, 2006; Golden & Veiga, 2008; Golden et al., 2008), on autonomy as well as work-family conflict⁴ and flexibility and their association with work outcomes such as performance, engagement, commitment, and job satisfaction (Allen et al., 2015; Delanoeije, Verbruggen, & Germeys, 2019; Gajendran & Harrison, 2007). Many scholars have also focused on well-being and health outcomes such as stress, exhaustion (Anderson et al., 2015; Sardeshmukh et al., 2012), and

⁴ Work-family conflict is here used as an umbrella term to denote conflicts between these two areas, without implying the direction of which area has caused or experienced a conflict.

employee health in general (Lunde et al., 2022). Increased autonomy and flexibility have been brought forth as key advantages of teleworking, being examined as both a moderator and mediator to explain teleworking outcomes (Gajendran & Harrison, 2007; Gajendran et al., 2015; Golden & Veiga, 2005; Golden et al., 2006). However, a recent systematic review of telework and its relationship to employee health (Lunde et al., 2022), finds scarce evidence of wellness outcomes thereby indicating a vast knowledge gap of the effects on employees. In two other reviews on well-being, among both positive and negative outcomes, an overall beneficial impact of telework was found (Charalampous et al., 2019; de Macêdo et al., 2020). These, however, did not provide any distinction on different types of teleworkers, based on teleworking extent or voluntariness.

Much like telework implications for wellness, many other of the claimed outcomes also remain inconclusive (Allen et al., 2015; Biron & Veldhoven, 2016; Boell et al., 2016; Gajendran & Harrison, 2007; Lunde et al., 2022; Oakman et al., 2020). Several arguments have been made to explain such inconsistencies. One explanation relates to the dichotomisation where employees are grouped into either being an office- or teleworker without further distinction of teleworking extent (Allen et al., 2015). In addition, selection effects could explain part of the inconsistencies (Delanoeije & Verbruggen, 2020). For example, those with higher stress levels will tend to utilise telework to a higher extent and high-performing individuals could to a higher degree be trusted to telework (Allen et al., 2015), implying that uneven access to teleworking opportunities can skew findings. Meanwhile, it is known that certain previous inequalities have been exacerbated due to the pandemic, and new inequalities have arisen, such as who can telework and not (Anderson & Kelliher, 2020; Blundell et al., 2020; Mallett et al., 2020).

It is clear then that while telework is well established historically and has accordingly been subject of research from various domains, inconsistent findings remain an issue. In other words, the current body of research cannot properly explain the implications of present day telework. While the positive effects have been raised frequently, the outcomes are still largely unknown (Mallett et al., 2020). Before the pandemic, the mode of telework has been an active choice for those it benefits (Anderson & Kelliher, 2020). Inconclusive findings and a changed work environment due to the pandemic are reasons to question the contextual relevance of previous research on telework. For a period, there has been little voluntariness involved in choosing telework as a work modality, while the effects and outcomes of this for the employee's motivation, wellbeing, and productivity have been largely unknown. In addition, while the impacts of the pandemic are calming down, telework is still considered an option ahead (Darouei & Pluut, 2021; Dobbins, 2021). As such, now more than ever new research is needed, which also takes into consideration the reasons argued for previous inconsistent results.

Concludingly, despite a vast amount of telework literature, much research remains inconclusive and incomplete. This, by not sufficiently considering the extent of telework performed and the effects of employees having the choice of telework or not. Lastly, previous research has put too heavy emphasis on whether telework is good or bad, without clearly taking the work context into account (Allen et al., 2015; Boell et al., 2016), thereby not specifying why or for whom. Today the managerial willingness to allow telework may have improved. However, what implications can be expected in terms of wellbeing and productivity for employees and organisations, by adopting new practices long-term, is largely unknown. The situation the pandemic has put the world and workers in, and which work contexts will be prevalent going forward, stresses the need for this understanding to be brought forward. To begin addressing these issues, appropriate measures will be taken.

Firstly, Self-Determination Theory (SDT) has been chosen as the theoretical lens to analyse the effects of telework as a work context. The theory is based on three basic needs: autonomy, competence, and relatedness. The satisfaction of these needs predicts behavioural and psychological outcomes, being antecedents of motivation and behaviour (Ryan & Deci, 2017). Further, the basic needs within SDT provide clear criteria for diagnosing human contexts, including the workplace (Vansteenkiste et al., 2020), and to understand the implications to the employee and organisation (Deci et al., 2017; Deci et al., 1989). Thus, it provides a practical level to grasp the prevalent inconsistent findings in outcomes, by looking into the need's satisfaction among the employees in their work context. By understanding these needs and their fulfilment, the outcomes of the work context, such as productivity and wellbeing, can be understood. Expanding the knowledge base to this type of understanding has previously been urged by the academic field (Deci et al., 2017). Lastly, the lens allows an understanding of whether teleworking practices affect everyone equally and in similar ways, or if it benefits or provides challenges for different groups. Grasping this is of utmost importance when potentially establishing a new way of working as a society.

Therefore, this study will consider the antecedents to motivational effects on employees, the aspect of choice, the degree of teleworking and individual differences.

1.2 Purpose, the research agenda

The purpose of this thesis is to answer the following research question:

- a) To what degree does the extent of teleworking affect the satisfaction of basic psychological needs?
- b) How do individual differences moderate the relationship between teleworking extent and the basic need's satisfaction?

1.2.1. Expected contribution

By answering the research question the expected theoretical contribution of this thesis is to i) expand the knowledge base on what effects the different modes of working have on employee's three basic needs, thus the antecedents of motivation, ii) gain an improved understanding on the impact of having the choice to telework and, iii) better grasp individual differences in need satisfaction across work modalities with different extents of telework. These insights are further expected to have practical implications by providing managers and decision-makers with this theoretical knowledge. By understanding the strengths and weaknesses of the teleworking and office context, plans and policies can take these insights into account. Efforts made to best accommodate employee need satisfaction can provide dual benefits to the individual and the organisation.

1.2.2 Delimitation

When investigating the effects of teleworking, many perspectives can be undertaken, and it is therefore important to state the scope of the inquiry. This thesis will focus on the motivational aspect of telework, measured through three basic needs which are motivational antecedents in SDT. While acknowledging that other more effect-focused approaches, looking at outcomes such as productivity and performance, may offer interesting insights, it is our firm belief that this approach can offer other interesting insights. The basic needs are antecedents of many behavioural effects. Therefore, through a focus on the basic needs, the greatest ability to grasp the consequences of work modalities is allowed. Furthermore, understanding the underlying reasons of motivation allow for targeted efforts of improvement if deemed necessary.

Naturally the interest of the study circles around knowledge workers who are able to telework. Thus, this study does not include workers with physical jobs or knowledge workers dependent on equipment that is only accessible at the employers' premises. Furthermore, acknowledging that the pandemic has affected the current work situation of many, the effects of the pandemic itself is not the focus of this study. Rather, the interest lies in grasping the effects of telework in general.

2. Theory

2.1 Background to the Self Determination Theory

SDT is an empirically based psychological theory, with origins from studies on intrinsic and extrinsic motivation in the early 70s (Deci, 1971; Deci, 1972a; Deci, 1972b). The research on SDT has since evolved, to include many researchers, fields and geographies of study, which supports its relevance

today (Ryan & Deci, 2017; Vansteenkiste et al., 2020). Being psychology-based entails that behaviours are seen as functions of psychological processes⁵, conscious or nonconscious (Ryan & Deci, 2017). Through this perspective, the mind interprets the social environment and shapes rules and principles that come to guide behaviours and reactions back toward the environment (Ryan & Deci, 2017; Ryan et al., 1997).

In seeing the individual as an active agent, SDT takes an organismic⁶ perspective on human development. This perspective entails an assumption that humans have an inner strive for growth and development, being intrinsically motivated and capable of behavioural self-regulation (Deci, 1975; Ryan et al., 1997). This entails that humans act on their environment⁷ (Deci, 1975), in order to best develop. In terms of the working environment, this would imply that a new mode of working would induce new influences, new interpretations and possibly new behaviours needed to allow for continued growth. Therefore, to grasp the motivational outcomes of the modes of working, the mind is deemed the most practical level to study. By studying the mind, the effects in terms of behaviour can be predicted. Furthermore, this level of analysis also allows successful interventions to take place, targeting the root cause of behaviours rather than just the symptoms.

Self-regulation occurs through the internalisation and integration⁸ of external social values as one's own, as something that the individual can identify with (Ryan & Connell, 1989; Ryan & Deci, 2000). When this process works well, individuals can be their true selves: curious, vital, and self-motivated human beings. The conditions determining the individual's ability to achieve self-actualisation is largely found in the individual's social environment, to what degree it supports or thwarts three basic needs for autonomy, competence and relatedness (Ryan & Deci, 2000b; Ryan, 1995). Thus, the central concern of SDT is to study these conditions (Deci & Ryan, 2008). The same individual can experience different degrees of support in different contexts and areas of life, leaving the person more

⁵ Seeing psychological constructs as causes of intentional behaviours has been guided by Heider's (1958) argument of using *naïve* or *common-sense* psychology to complement clinical psychology.

⁶ Although the organismic dialectical approach today is accepted within life science, it is a relatively young concept that was given birth through debates between the opposing vows of reductionists and vitalists during the 19th and 20th centuries. The reductionists wanted to reduce human biology into the neater form of physics, while vitalists argued the unique human nature, life and development could not be understood through such reduction. Instead of these extremes, the organismic paradigm allowed a middle path to understand living systems. Here, interdependencies are accepted and the whole is considered, rather than only individual parts (Ryan et al., 1997).

⁷ This contrasts a mechanistic approach, which assumes that humans are passive and under control of their environment.

⁸ Internalisation and integration are central concepts to understanding how an individual can adapt to their social environment and be self-determined. When a person solely takes in an external value or regulation, this is referred to as internalisation. Integration is used to describe a state when internalisation has progressed further, when an individual has integrated a value or regulation with the self and sees the origin of this as their own (Ryan & Deci, 2000b). This allows individuals to act in accordance with their values, integrity, psychological coherence and wellness (Ryan & Deci, 2017).

or less motivated in that environment (Deci & Ryan, 2008; Ryan & Deci, 2017; Ryan, 1995). This allows us to analyse the effects the mode of working, determined by the degree of telework, has on the individuals' need satisfaction.

The strive for individuals to act in a way that allows their needs to be met, provides action with purpose (Ryan et al., 1997). Needs are treated as the specified nutrients required for healthy development⁹. When these are met, the manifestation is threefold: 1) Through intrinsic motivation which allows psychological growth, 2) Through internalisation and integration of behavioural regulation to the social norms, which allow integrity, 3) Through the experience of vitality and wellness (Ryan & Deci, 2017). These are necessary for organismic self-renewal and extension (Ryan et al., 1997). To express the importance of the three needs to humans, and the positive/negative effects of satisfaction/thwarting, a metaphor is often used of nutrients to plants. Nutrients allow plants to grow and develop. A plant without access to sunlight and water will not be able to grow and will eventually die, just like the psychological development and motivation in humans, if the basic needs are unsatisfied (Vansteenkiste & Ryan, 2013). In this sense, the nutritional value supplied to employees by the different modes of working are uncertain, but key to understanding the effects on employees.

2.2 Three basic psychological needs

2.2.1 Autonomy

The three needs are supported in previous empirical research on psychological needs (Ryan & Deci, 2000b). Accordingly, the need for autonomy has an empirical basis in deCharms (1968) and Deci (1975). deCharms (1968) further extends on Heider's (Heider, 1958) work on perceived locus of causality (PLOC), by adding internal (I-PLOC) and external (E-PLOC) dimensions. To illustrate the I-PLOC and E-PLOC of behaviour deCharms uses metaphors of Origins and Pawns. An Origin is a person acting with an I-PLOC, being driven and aware of one's own motives for the behaviour. Pawns, on the other hand, have an E-PLOC, being affected by outside forces to act (deCharms, 1968). Autonomy is achieved when action is initiated and experienced by the self (Deci, 1975). Thus, the Origin, in this case, has autonomy. In line with the organismic view (Ryan et al., 1997), there is a drive within people to seek out and conquer optimal challenges, and to grow (deCharms, 1968; Deci, 1975). Thus, striving to be an Origin is a human tendency (deCharms, 1968). As such, the PLOC

⁹ The SDT definition of needs differs from the everyday connotation of the word, which often describes a strong desire. SDT treats needs as pre-conditional factors essential for optimal functioning with growth and integrity (Ryan, 1995). While there are endless wants and desires, there are currently only three recognised basic needs (Ryan, 1995; Vansteenkiste & Ryan, 2013).

affects behaviour and physical outcomes (deCharms, 1968; Ryan & Deci, 2000b). The processes of integration and internalisation allow individuals to gain an I-PLOC and therefore autonomy, as they enable external information and values to be seen as internal (deCharms, 1968). Autonomy has received a unique position among the needs, as its satisfaction ultimately allows other needs to be met as well (Ryan & Deci, 2017), through enabling purposeful action. In the workplace, the question is if the individual feels able, in any work modality, to initiate action from within in order to satisfy their basic needs.

Due to an often-prevalent misunderstanding, it is important to note the distinction between autonomy and independence. Autonomy is the ability to be the director of one's own actions and behaviours, through self-regulation. It is not independence. Rather, the contrary has been proven. For example, having good relationships with people one trusts has been proven to support autonomy (Ryan et al., 1997), which may be contrasted to independence and not being reliant on others. Arguably most people can relate to feeling a greater degree of self-direction and confidence to seek out exciting challenges in the workplace when having supporting colleagues, compared to being siloed and unsupported.

2.2.2 Competence

The empirical foundation of the need for competence originates from Harter (1978) and White (White, 1959). In White's (1959) paper competence was introduced as a motivational concept and an intrinsic need that individuals strive to satisfy. Harter (1978) set out to refine and extend White's work. In short, Harter (1978) extended the concept in terms of describing which components contribute to effectance¹⁰ motivation, by also considering the negative effects of effectance failure. She discussed how a challenge must be of optimal degree, neither too hard nor too easy for success to result in satisfaction. The effect of the social agents in one's environment, interactions, trade-offs between intrinsic and extrinsic motives and the internalisation process are stressed as important variables for the need. Likewise important, is considering the individual's perception of competence and control (Harter, 1978). Deci & Ryan (1980) picked up on these discussions and included the need for competence as a prerequisite for intrinsic motivation. Today, the concept refers to experiencing opportunities and the support required to successfully express and take part in the development of one's capacities. In other words, the need for competence is satisfied by feeling efficacy in interactions with the social environment (Ryan & Deci, 2017; Ryan & Deci, 2000b; Van den Broeck et al., 2010). Thus, it is important to understand if employees feel competent in any of the work modalities.

¹⁰ Harter leaned towards the term effectance rather than competence. Here, these can be seen as synonyms.

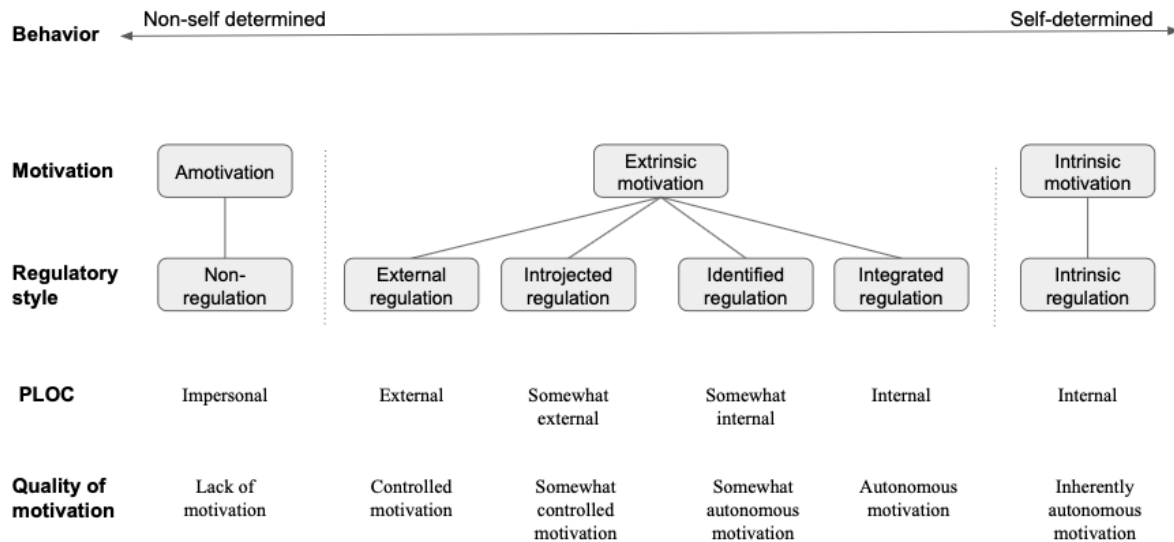
2.2.3 Relatedness

Relatedness was the last need to be recognised, being based on Reis (1994) and Baumeister & Leary (1995), which came out after the other two needs had already been accepted within SDT. Although the theoretical understanding of the human desire to create and maintain relationships was not new at the time, this could now be supported in the empirics. They showed links between belonging, cognitive and behavioural responses as well as an effect on well-being (Baumeister & Leary, 1995). While Baumeister & Leary's (1995) contribution was largely empirical, Reis' (1994) contribution was more related to the methodological approaches to the study of relationships. Today's concept of relatedness includes feeling connected, involved with a sense of belonging (Ryan & Deci, 2000b). To do so, a person needs to both feel cared for, through sensitivity and responsiveness, as well as similarly care for others (Reis, 1994). The person must engage in the relationship voluntarily for it to satisfy their need for relatedness, and the less conditional the relationship is, the more deeply satisfying it will be experienced (Ryan & Deci, 2017). As relatedness is important to a workplace, as it impacts the relationship with colleagues and partners and thus overall satisfaction with the work situation, it is also important to understand the effect of work modalities on this need.

2.3 Motivation

2.3.1 Background on motivation

Motivation is activation and intention. It is what drives us forward, towards growth. It ignites energy, direction, and persistence (Ryan & Deci, 2000b). Intention entails a formulation of behaviour or outcome that a person will attempt to perform or achieve. This formulation either occurs on a conscious or preconscious level (Deci & Ryan, 1990). Being what makes people think, act, develop and produce, it is clear how it is of relevance to any person in a leading position (Deci & Ryan, 2008; Ryan & Deci, 2000b). However, SDT treats motivation differently from other motivational theories which often treat it as uniform, with differences in quantity (Deci & Ryan, 2008; Ryan & Deci, 2017; Ryan & Deci, 2000b). SDT explicitly differentiates different types of motivation, and the relevance for doing so is that this has effects on the experience of the motivation, the behavioural and health outcomes (Ryan & Deci, 2017). All humans are seen as active, striving and motivated by nature. However, it is known that this is not always the case, as some people are passive, amotivated or work because of external pressures rather than an internal drive (Ryan & Deci, 2000b). By differentiating motivation into several categories along a continuum these differences in motivation and behaviour can be understood. Central to this categorisation is the relative autonomy or control of regulations (Deci & Ryan, 2008).



Note: This figure is based on Ryan & Deci (2000b) and Gagné & Deci (2005)¹¹.

Figure 2. An illustration of motivational types and its components.

2.3.2 Intrinsic motivation

Intrinsic motivation only occurs when a person experiences autonomy through an I-PLOC, competence, and relatedness through relational responsiveness and security. Thus, if any of these three needs are undermined, the individual's potential for intrinsic motivation is undermined (Ryan et al., 1997). When intrinsically motivated, the drive to explore and develop causes individuals to expand their competencies and capacities (Ryan & Deci, 2017). These behaviours are motivated by the satisfaction and enjoyment of performing them rather than through some external stimuli (Ryan & Deci 2000b).

2.3.3 Extrinsic motivation

Externally motivated behaviours are done not because they are enjoyable in themselves, but because they have an external value. Such behaviours are undertaken in all parts of life, including work. Through internalisation, daily activities that do not contain joy do not have to be coerced but can be willingly undertaken. However, the degree to which the regulation of activity is internalised can vary largely, with varying levels of implied autonomy (Ryan et al., 1997) and self-determination (Deci & Ryan, 1990; Deci & Ryan, 1985; Ryan & Deci, 2017). Although a person may undertake a task with

¹¹ Early empirical work by Deci (1975) and Deci & Ryan (1980) laid the foundation for motivational categorisation (Ryan & Deci, 2017). In 1997 a motivational continuum was suggested, from intrinsic and external motivation to amotivation (Ryan et al.). Versions of a continuum within SDT have been depicted; however, this figure contains the essence of these (Ryan & Deci, 2000b).

as much energy and effort in one of the regulations as the category to the left or right, the quality in terms of personal experience, enjoyment, stability, persistence, and the quality of performance will be higher with higher levels of autonomy (Ryan, 1995). Integrated regulation is the most autonomous form of external motivation, with the same motivational quality as intrinsic motivation, but performed due to the external value rather than the pure enjoyment of the act (Ryan et al., 1997). Through identified regulation, introjected regulation and external regulation the quality of motivation decreases with the loss of autonomy and increasing control (Ryan et al., 1997).

2.3.4 Amotivation

Amotivated people lack an intention to act (Ryan & Deci, 2000b), which results from a failed internalisation (Ryan et al., 1997). The individual does not see the act or behaviour as valuable, a result from either not being able to connect the behaviour with the outcome, or with not feeling capable, competent, or supported (Ryan, 1995).

2.4 Outcomes of need satisfaction and autonomous motivation

An organisation can achieve a higher quality of motivation and a higher degree of cohesion and stability in the organisation through having more autonomously motivated employees. This can be achieved by considering the effect of the social environment. If providing support for the three basic needs, internalisation and integration are more likely to occur, leading to higher quality motivation (Ryan et al., 1997). Through autonomy support, the social context provides choice, encourages initiative, and limits pressures and controls. The degree of structure, regarding expectations and the relationship between behaviour and outcomes, should further relate to the individual's own perceived competence (Deci & Ryan, 1990).

Being a highly empirical field, the effects of need satisfaction and autonomous motivation has been found to lead to a number of effects including increased occupational and organisational commitment (Fernet et al., 2012; Gagné et al., 2008; Otis & Pelletier, 2005), job satisfaction (Van den Broeck et al., 2013), work engagement, flow and affect (Schade et al., 2021; Van den Broeck et al., 2013), better performance (Baard et al., 2004), well-being¹² (Cantarero et al., 2021; Van den Broeck et al., 2013) psychological growth, adjustment and internalisation (Baard et al., 2004; Van den Broeck et al.,

¹² Wellness is said to be an outcome of need support and intrinsic motivation, however, there is a range of definitions of wellness. Within SDT the concept relates to thriving or being fully functioning, states that can be evaluated objectively. Thriving entails vitality, access to and awareness of one's capacities and self-integration. Fully functioning describes an interplay between one's needs and outer environment, being open and non-defensive in interpreting the surrounding and its circumstances. Thus, wellness does not equate to subjective well-being, such as being happy, experiencing a presence of positive emotions, or lack of negative emotions. Rather, happiness may be seen as one of several outcomes and an indicator of well-being (Ryan & Deci, 2017).

2016). Other effects include better moral reasoning, empathy and high quality relations (Ryan & Connell, 1989) more positive emotions, creativity, flexibility and persistence (Deci & Ryan, 1987) acceptance toward organisational change (Gagné et al., 2000; Lynch Jr. et al., 2005) counteract emotional exhaustion, strain and burnout (Fernet et al., 2012; Van den Broeck et al., 2013) While there are clear positive effects of need support and autonomous motivation at work, it has been shown that people experience lower need support, well-being and more negative moods on work days compared to weekends (Ryan et al., 2010). The negative effects of need frustration can largely be considered as the opposite of the effects of need satisfaction¹³. Thus, the downsides can be tremendous for the individual and their surroundings. While mainly focusing on need satisfaction in this study, it is important to be aware of these downsides.

In fact, SDT has received criticism on the basis of being too idealistic, focusing on growth, development, and integrity, but unable to explain the dark side of human activity such as anger or hostility (Pyszczynski et al., 2000). In a meta-analysis by Van den Broeck et al. (2016), the mentioned critique showed to have some substance to it, as the basic needs could only explain about half of the variance in negative outcomes compared to the positive ones. However, SDT has historically dealt with both the positive side of growth and integration as well as the darker sides implied by need thwarting including alienation and pathological effects. Additionally, it makes clear theoretical and practical suggestions on how to reduce these negative effects (Ryan & Deci, 2000a). This may imply that while SDT has taken account of the dark effects, researchers have not efficiently considered it in their research. This study is not specifically focused on the need frustration aspect either. However, if indications of need frustration are found, a cautious effort to highlight these and their implications for future research directions will be made.

2.5 Autonomy-supportive behaviours can be learned

The first large-scale empirical research in a work context was conducted in 1989 (Deci et al.) where it was shown that autonomy-supportive managers have positive effects on employees' work lives. Those employees with autonomy-supportive managers showed higher trust in the corporation and greater potential for advancements. Hardré and Reeve (2009) also conducted a similar study and found that managers who had received training 1) were able to adopt a more autonomy-supportive style toward their employees, 2) had employees who experienced less controlled motivation, and 3) had employees with greater workplace engagement. Thus, there are positive effects of autonomy-supportive

¹³ Need thwarting may lead to controlled motivation, poor psychological health and lower engagement (Trépanier et al., 2013) as well as social alienation (Ryan et al., 1997). Need frustration can further cause stress (Cantarero et al., 2021; Olafsen et al., 2017) which is associated with emotional exhaustion, a cause of burnout (Fernet et al., 2012; Olafsen et al., 2017; Trépanier et al., 2013). Stress further predicts absenteeism and turnover intention (Olafsen et al., 2017).

managerial behaviour, but perhaps more importantly, these behaviours can be learned. Furthermore, employees can engage in job-crafting behaviours that align their work with their basic needs and own values (Slemp & Vella-Brodrick, 2014). Van Wingerden et al. (2017) have further shown that a job-crafting intervention can support basic need satisfaction. Furthermore, job resources can aid in achieving autonomous motivation (Fernet et al., 2012). Arguably, teleworking may be seen as a resource for some, in aiding them achieve need satisfaction. Consequently, an autonomy intervention can target employees, management (Hardré & Reeve, 2009; Slemp & Vella-Brodrick, 2014), and the work context.

3 Theoretical hypothesis development

The robust empirical evidence that need satisfaction is related to various favourable outcomes cements the relevance of researching need satisfaction on its own in different social contexts and environments. As such, we feel confident in focusing our inquiry on to which extent these basic needs are satisfied within the work contexts. In the first section, the effect on basic need satisfaction as a function of the extent of telework will be hypothesised. In the following section, we hypothesise how individual differences impact the relationship between the teleworking extent and individual differences. For all hypotheses, see Appendix 1.

3.1 The three basic needs in teleworking

3.1.1 Autonomy in teleworking

The definition of autonomy in the teleworking literature¹⁴ includes freedom of choice and own discretion in how a task may be performed (Allen et al., 2015; Hackman & Oldham, 1976) in line with the SDT definition which also refers to the individual's control and volition in deciding how to perform its work in a way that aligns with the self (deCharms, 1968; Deci & Ryan, 1980; Ryan & Connell, 1989). However, the telework definition also includes the concept of independence, which the SDT definition does not. Thus, the findings from the teleworking literature cannot be directly translated to outcomes of autonomy in SDT, but rather indicate possible implications. These implications have been carefully assessed in the following section, where we will argue that the extent of teleworking positively relates to autonomy satisfaction.

¹⁴ Allen et al. (2015) uses Hackman & Oldham's (1976, p. 258) definition of autonomy:

“The degree to which the job provides substantial freedom, independence, and discretion to the individual in scheduling the work and in determining the procedures to be used in carrying it out.”

Autonomy is one often cited advantage in telework and there is a consensus that they are related (Gajendran & Harrison, 2007; Kossek et al., 2006; Maruyama & Tietze, 2012) with indications that a higher teleworking intensity results in a higher perceived autonomy (Gajendran et al., 2015). This relationship may in turn facilitate other positive outcomes. Autonomy has been found to have a mediating role in the relationship between teleworking and increased job satisfaction and performance, lower role stress and turnover intent (Gajendran & Harrison, 2007), and higher work engagement (ten Brummelhuis et al., 2012). Additionally, autonomy as a moderator has been associated with lower work-home conflict in the telework context (Allen et al., 2015; Golden et al., 2006) and again, higher job satisfaction for those teleworkers with higher autonomy (Golden & Veiga, 2005). These additional outcomes make sense, as autonomy can give the individual better conditions to execute its tasks in a way it sees fit, that fits its skills and interests and temporal preferences, through the flexibility that it provides. Additionally, telework is reasoned to generally imply lesser supervision as compared to the office and is argued to lead to autonomy satisfaction through this as well (Gajendran & Harrison, 2007). Thus, the extent of telework can, through autonomy, lead to a myriad of beneficial work outcomes.

Due to the strong connections between telework and autonomy, it is hypothesised that higher extents of telework should lead to higher levels of perceived autonomy such as:

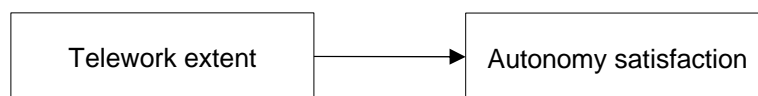


Figure 3. Illustration of hypothesis 1a.

H1a: There is a positive effect between telework extent and autonomy satisfaction, such that autonomy satisfaction increases for higher degrees of telework.

However, findings have at times been contradicted as the relationship between telework and autonomy does not always materialise (Groen et al., 2018; Mazmanian et al., 2013; Murray & Rostis, 2007) leading to the question whether increased autonomy can be taken for granted within the telework modality (Sewell & Taskin, 2015). Perhaps the factor of perceived choice can account for this.

Individuals have an inner strive for basic need satisfaction (Ryan et al., 1997). Hence, they act in a way that is suitable to satisfy their needs, given that they have the option and ability to do so.

Therefore, it is important to consider whether there is a choice and how the presence of choice impacts the autonomy satisfaction in relation to the teleworking extent. Many authors have recently brought up the aspect of choice and self-selection, as an issue in current research that may explain part of the prevalent inconsistent findings on telework (Allen et al., 2015; Delanoeije & Verbruggen, 2020; Lapierre et al., 2016; Wang et al., 2021). It has been suggested that some previously identified benefits might be especially valid for those who have the option to choose their work context (Kaduk et al., 2019) but not representative of the general population.

The feeling of choice is central in the SDT conceptualisation of autonomy: “to experience a sense of choicefulness about one’s actions” (Koestner & Losier, 1996). Rather than solely measuring whether autonomy is higher because of characteristics of each respective work context, this construct allows for the perspective of moderation. This, as the option of telework extent forms part of an additional choice and freedom to act voluntarily. Given the belief that autonomy satisfaction is higher in the telework context and that individuals tend to orient towards an environment with higher need satisfaction, being given the choice to do so is thought of as a supportive structure in the individual's environment. Thus, choice is hypothesised to accentuate the relationship between teleworking extent and autonomy satisfaction, such as:

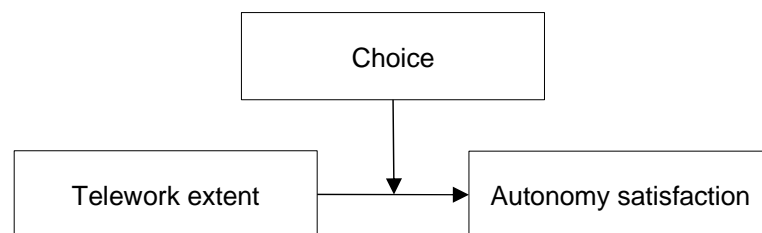


Figure 4. Illustration of hypothesis 1b.

H1b: Choice positively moderates the relationship between the extent of telework and the autonomy satisfaction, such that higher levels of choice accentuate the positive relationship between the teleworking extent and autonomy satisfaction.

3.1.2 Competence in teleworking

Competence regards the innate strive to feel effective (White, 1959) and possess control (Harter, 1978). These aspects are important to learn, grow and develop (Deci & Ryan, 2000b), all key to professionals in their work roles and career. In this section, we will argue that the need for

competence will be increasingly satisfied with teleworking extent overall. This relationship will also be argued to be moderated by the individual's experienced interruptions and interdependence.

In general, telework is well associated with increases in productivity and performance (Allen, et al. 2015, Gajendran & Harrison 2007) also allowing employees to feel more organised and efficient (Morgan, 2004), thus competent. Two potential explanations for this that have been brought forward are that teleworkers have more hours at their disposal from saving on commuting time and face fewer disruptions when working outside the office (Bailey & Kurland, 2002; Gajendran & Harrison, 2007). If teleworkers are more productive it should follow that they feel efficient and in control of his or her work task. This is conducive to competence satisfaction and accordingly, an initial hypothesis for the relation between telework and competence satisfaction, such as:



Figure 5. Illustration of hypothesis 2a.

H2a: There is a positive effect between telework extent and competence satisfaction, such that competence satisfaction increases for higher degrees of telework.

However, it needs to be acknowledged that different characteristics of the job and the environment in which it takes place may impact to which extent this relationship holds. This as the feeling of competence is likely to be impacted by the fit between the work environment and the work activity (Gerdenitsch, 2017). Indeed, certain jobs have been found to face major teleworking constraints (Mokhtarian et al., 1998). Specifically, in this study, we propose the level interruptions encountered during a day and the level of interdependence needed with others as important moderators to the relationship between the extent of teleworking and competence satisfaction. These factors should have implications for where competence satisfaction is best supported, by contributing to the individual's level of experienced efficacy and productivity.

As for interruptions, most jobs benefit from focused time, especially those high in complexity, and cognitive skills benefit from uninterrupted periods of time (Davis et al., 2011; Speier et al., 2003). In general, an advantage of teleworking specifically has been the ability to avoid interruptions at work (Gajendran & Harrison, 2007). While interruptions can still occur with teleworking such as through e-

mails and phone calls, there is a greater sense of control associated with managing these (Wajcman & Rose, 2011), due to being able to reply at a later point. Arguably, those experiencing degrees of interruptions in the office context would benefit more in terms of competence in the teleworking context. Due to being better able to isolate oneself from distractions for periods of time in the telework context, focused time and efficient execution should accentuate the relationship between the teleworking extent and competence satisfaction for those with high degrees of interruptions in the office context.

However, interruptions are not exclusive to the office environment. For some, telework may complicate the balance between work and home roles, where for example teleworkers might be expected to take on more of the home responsibility and choose to interrupt work for a more salient home task (Allen et al., 2015; Delanoeije et al., 2019; Golden et al., 2006). Additionally, in the home environment, there is the risk that members of the household, rather than colleagues, interrupt the worker (Allen et al., 2003). Thus, for these people the office environment may facilitate the competence satisfaction more, due to removing the distractions of the home setting. Consequently, the relative degree of interruptions in the respective context should be considered on an individual level. As such, with relatively higher interruptions in the office context the relationship between the teleworking extent and competence satisfaction should be accentuated. With relatively more interruptions in the teleworking context, the opposite should hold true. Thus:

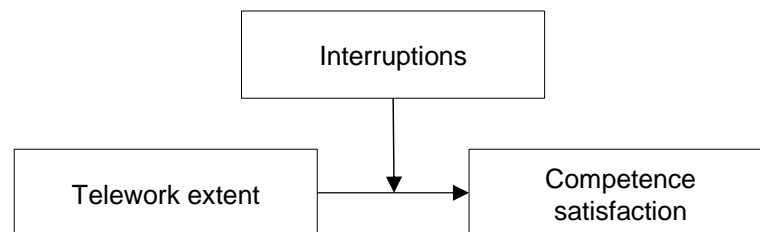


Figure 6. Illustration of hypothesis 2b.

H2b: Interruptions moderate the relationship between telework extent and competence satisfaction, such that those with relatively more interruptions at the office experience higher competence satisfaction with a higher extent of teleworking.

Additionally, work tasks and jobs are more or less interdependent, requiring varying amounts of reliance on colleagues to effectively complete tasks. The degree of interdependence is believed to impact the relationship between teleworking extent and competence satisfaction, regardless of the

direction of dependence. Highly interdependent jobs and tasks which require more rapid information exchange and coordination with colleagues might suffer from teleworking (Golden & Veiga, 2005), as it may be harder to communicate and follow up with one another when physically detached. In general, it is beneficial with face-to-face communication, due to providing the highest potential for rich and deep information (Daft & Lengel 1983; Daft & Lengel 1986). As such, it is easy to understand how this may impact interdependent people working in the teleworking context, away from the office. Consequently, for highly interdependent employees, the positive relationship between telework extent and competence satisfaction should be dampened, because they may not experience a similar degree of productivity and efficiency if frustrated by a lack of necessary interaction. Thus:

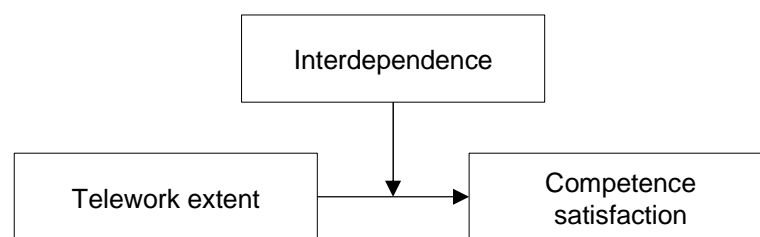


Figure 7. Illustration of hypothesis 2c.

H2c: The degree of interdependence negatively moderates the relationship between telework extent and competence satisfaction, such that higher degrees of interruptions dampen the effect of teleworking on competence satisfaction.

3.1.3 Relatedness in teleworking

Relatedness refers to the feeling of belonging and connection to others, to care for, and to be cared for (Baumeister & Leary, 1995; Ryan & Deci, 2000b; Reis, 1994). In a work context, relatedness is important to enjoy the company of one's colleagues. It is also important for the performance of the group, as a group caring for one another is likely more inclined to help and support one another. In this section, it will be argued that the telework context reduces employees' relatedness satisfaction.

The telework context has been shown to reduce the experienced relatedness between colleagues (Golden, 2006; Schade et al., 2021). The higher the degree of telework, the lower the experienced relatedness (Belanger, 1999; Gajendran & Harrison, 2007; Wöhrmann & Ebner 2021). This is likely because of reduced face-to-face interaction in the telework context (Gajendran, Harrison 2007, Golden & Veiga 2008), making it harder to communicate deeply, spontaneously, and openly. While

some communication tools may enable rich communication (Daft & Lengel 1983; Daft & Lengel 1986), they can still not reasonably meet the quality of physical interaction in a more social sense. Therefore, teleworking implies poorer quality communication and hence reduced ability to build and maintain deep bonds. The lack of relatedness and social interaction in the teleworking context further links to professional isolation (Allen et al., 2015; Bentley et al., 2016; Charalampous et al., 2019; Golden et al., 2008), which is a type of social isolation contextualised to the workplace (Bentley et al., 2016). Thus, the extent of telework should negatively relate to relatedness satisfaction.

While many authors have explored the negative social effects related to telework, social interactions at the office also come with negative side-effects. In this context, there are indeed social costs of interactions (Wöhrmann & Ebner, 2021), such as social exhaustion (Windeler et al., 2017). Social exhaustion may be greater for those who work and interact with many people. Therefore, while recognising the downsides of high extents of teleworking, a low extent of teleworking may allow recovery from the social costs of interaction. All in all, the extent of telework is hypothesised to have a negative effect on relatedness satisfaction. Meanwhile, this effect is expected to be less pronounced for lower degrees of telework, where a beneficial social recovery effect and sufficient interactions needed for relationship maintenance counter the negative impact. Thus:



Figure 8. Illustration of hypothesis 3.

H3: There is a negative effect between telework extent and relatedness satisfaction, such that relatedness satisfaction decreases for higher degrees of telework.

3.2 The effect of individual differences on need satisfaction

One of the pillars that SDT relies on is seeing the three needs as universal, independent of personal or cultural differences (Ryan & Deci, 2017). Thus, the social context is the focus of study, however, this does not mean that individual differences cannot be accounted for. Rather, individual differences, such as age, gender, occupational status, and income may impact and predict the level of need support an individual receives from the social context (González et al., 2014). Therefore, the impact of demographic variables has received steadily growing attention (Vansteenkiste et al., 2020). Within the telework literature it has been found that individual differences impact the individual's motivation to

choose to telework (Bailey & Kurland, 2002), and the effects of telework differ between demographics (Mallett et al., 2020). However, the question of why one chooses to telework and what happens when they do is still largely unanswered (Bailey & Kurland, 2002). Thus, considering these variables remains important.

3.2.1 Age as a moderator

When people age, they gain experience and perspective. Thus, it is no surprise that older age is positively related to well-being and mental health. This can be explained as older groups report more intrinsic aspirations and basic need satisfaction compared to younger groups (Mackenzie et al., 2017), implying increased autonomy. This may be understood as individuals with increasing age and experience figure out what matters in life and act in accordance with this. Furthermore, age has been found to positively relate to competence and relatedness satisfaction (Schade et al., 2021). Older age has been found to lead to an enhanced practice of knowledge sharing (Tønnessen et al., 2021), perhaps due to understanding that sharing knowledge and helping one another is the most efficient way to produce, rather than trying to manage everything by oneself. Further, older people may have had the time to establish a larger contact network whom they can effectively share knowledge with.

Age is also highly correlated with other life characteristics including marital status, employment status, and status within the organisation (Mackenzie et al., 2017, Maruyama et al., 2009), suggesting that age in terms of experience may not act alone in predicting these positive effects in well-being. To have a higher degree of experience can imply both an increased certainty in one's skills, but also the trust one receives from others, leading to better support for competence satisfaction. With higher ranked and more secure employment statuses, one also may have more degrees of freedom in how to best perform one's work, implying autonomy. In the teleworking context, where independence and self-organisation are arguably more important compared to the office, this certainty in one's skills, received trust and degrees of freedom, may accentuate the positive relationship between the teleworking extent and satisfaction for competence and autonomy respectively. With long-lasting relationships in one's overall network, the degree of relatedness may also be benefitted in the teleworking context, as deep and long-lasting relationships are believed to be more resilient to temporary interruptions in interaction. Thus, age is expected to have an overall positive moderation effect on the relationship between teleworking extent and basic need satisfaction. This implies an attenuation of the hypothesised positive relationship between telework extent and competence and autonomy satisfaction and a dampening effect on the hypothesised negative relationship between telework extent and relatedness satisfaction. Thus:

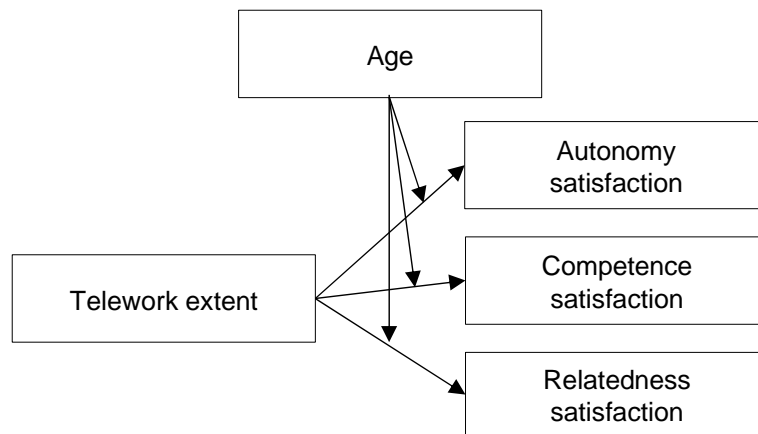


Figure 9. Illustration of hypothesis 4.

H4: Age positively moderates the relationship between the teleworking extent and basic need satisfaction, such that increasing age accentuates the relationship between teleworking extent and the need satisfaction for autonomy and competence, while it dampens the relationship for relatedness.

3.2.2 Gender as a moderator

Gender effects have been a topic of research within teleworking (Allen et al., 2015) and the research suggests either that men are more likely to telework than women or that the distribution is fairly equal (Bailey & Kurland, 2002). However, the motives are seen to differ between genders. Women with children are more likely than men to opt for teleworking, due to family and stress benefits, but less likely to have the option (Barrero et al., 2020; Mokhtarian, 1998; Mokhtarian et al., 1998; Singh et al., 2012). While acknowledging an occupational divide between the genders, where some jobs may be more suitable for teleworking, this only explains part of the differing degree of choice between the genders (Fischer et al., 2021, Mokhtarian et al., 1998). Rather, a lack of choice is often grounded in a lack of trust (Fischer et al., 2021) one receives from its immediate manager. Gender has also been shown to have effects on basic need satisfaction (Mackenzie et al., 2017). Female employees tend to see their managers as less autonomy-supportive, receive lower performance evaluations, and experience less well-being than their male colleagues (Baard et al., 2004).

Thus, there are indications towards women having lower need satisfaction in the office space. However, in relation to the teleworking context, women have been found to engage in more communication when teleworking and in digital knowledge sharing overall (Belanger, 1999; Tønnessen et al., 2021), supporting the need for competence, especially in a digital setting. Furthermore, outside of work, women often have more home and family responsibilities

(Bhattacharjee, 2020; Schade et al., 2021; Sullivan & Lewis, 2001). An often-reported negative outcome of telework is a blurred line between work and family/home (Delanoeije et al., 2019; Eddleston & Mulki, 2017; Kotera & Correa Vione, 2020; Murray & Rostis, 2007). However, individuals working from home can better engage in their family role (Darouei & Pluut, 2021). Thus, for women who often have a higher workload at home, the blurring of boundaries between home and work responsibilities and the flexibility it implies, may better equip them to manage and balance the demands of their home- and work role. Thus, the need for competence among women should be higher in the teleworking context than the office context. Further, being able to live up to one's values and aspirations in both the home and work roles, without having to compromise on one for the other, may improve the feeling of being able to act with autonomy. In addition, by being able to effectively manage both the professional and personal role, the satisfaction of competence at work is better supported. This has led to the following hypothesis:

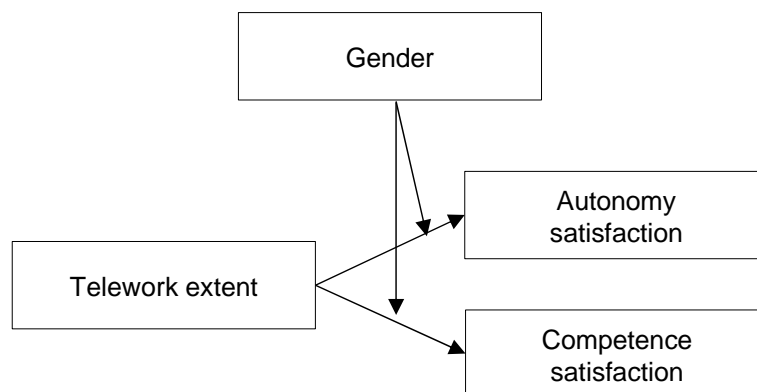


Figure 10. Illustration of hypothesis 5.

H5: Gender moderates the relationship between teleworking extent and autonomy and competence need satisfaction, such that the relationship is stronger for women than men.

3.2.3 Time in role as a moderator

Those who have a longer tenure are more likely well socialised and, in some cases, have “earned” the right to telework (Fischer et al., 2021). What is expected of a person, how routines and structures work, and who the colleagues are should be increasingly clear with the time a person has spent in their current role, thus implying an increased allowance of their own control. This is especially beneficial in the teleworking context, as allowing for degrees of freedom needed to effectively take decisions is arguably important when working remotely. This implies both a volition aspect and an aspect allowing for efficiency, accentuating the expected autonomy and competence satisfaction in this

context. Therefore, the time one has spent in the current work role is hypothesised as a moderator as follows:

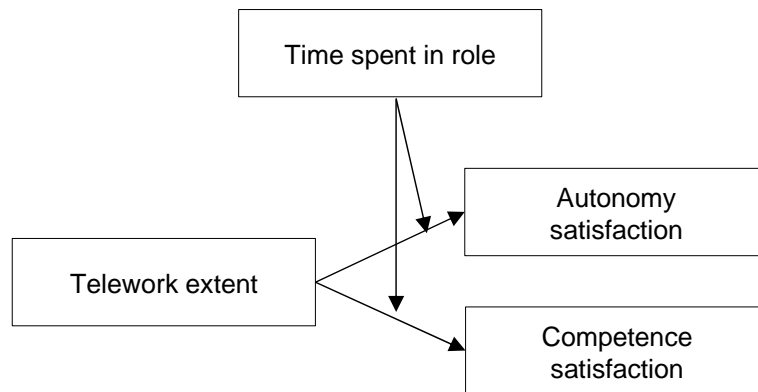


Figure 11. Illustration of hypothesis 6.

H6: The time one has spent in one's role positively moderates the relationship between teleworking extent and the satisfaction for autonomy and competence, such that an increasing time in role accentuates the effect telework has on these need satisfactions.

3.2.4 Income as a moderator

High status, high-income earners are more likely to desire to and have the option to telework (Bailey & Kurland, 2002; Barrero et al., 2020; Singh et al., 2012). During the pandemic, many have spent money from their own funds to set up some form of working space at home (Barrero et al., 2020), which high-income earners are better able to do. Further, high-income earners are better equipped to afford a larger living space and avoid overcrowded living (Cable & Sacker 2019), thus better able to create a separate working area. As such, high-income earners are better positioned to create functioning work areas for themselves when teleworking. Accordingly, those with higher income levels are expected to have a higher competence satisfaction than lower-income earners when teleworking due to their ability to make the home office into a focused work area where they can work focused and efficiently. Thus, the hypothesis follows as:

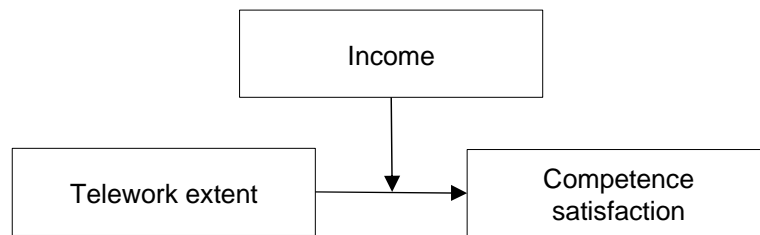


Figure 12. Illustration of hypothesis 7.

H7: Income positively moderates the relationship between telework extent and competence satisfaction, such that increasing levels of income accentuate the positive relationship between telework extent and competence satisfaction.

3. Methodology

3.1 A positivist approach

The research fields of motivation and telework are mature, backed by extensive research within a variety of areas. However, research on combining these fields is lacking and the widespread adoption of remote working options during the pandemic brings the contextual relevance of past telework research into question. Thus, more specific research is of value (Edmondson & McManus, 2007), which will be provided by focusing on the combination of these fields and the extent of the effects. Hence, this paper aims to be specific about the context's effects on basic need satisfaction, the extent of the effects, and indicate some initial results regarding the moderating effect of individual differences' such as age, gender, income level and the time one holds in its current role impact, on the relationship between Telework extent and need satisfaction. In the undertaking of answering this, it was intuitive to base this study on the existing knowledge within the field. Through deductive reasoning and approach to theory (Bryman & Bell, 2015), established theoretical frames and findings from the literature have been main drivers of hypothesis development. The work has also been aided by our own reasoning regarding which effects and relationships reasonably should hold true. Further, the ontological positioning of objectivism (Bryman & Bell, 2015), guided the collection and analysis of data. Thus, the individual's need satisfaction is seen as a cause of their social environment's support structure, which may differ based on their physical place of work. Need satisfaction is seen as observable, measurable, and consequently testable. Naturally, because of these accounts, the epistemological view of knowledge is positivistic (Bryman & Bell, 2015). This stance allows hypothesis testing to act as a tool in grasping reality through quantitative data, collected through surveys, with the goal of contributing new knowledge to the field. With regards to the analytical tool of SDT and the common practice used within the field, there is no objection between the analytical lens and the chosen research approach.

3.2 Practical considerations of data collection

Firstly, to enable the positioning of this study as an extension of previous knowledge, a deep dive into the existing knowledge base was necessary. Initially, papers were searched for through the following databases: Scopus, Business Source Premier, Google Scholar, and the aggregator search tool Primo VE provided by the Stockholm School of Economics library. The following search terms were used for telework: telework, telecommuting, flexwork, new ways of working, hybrid work, dispersed work, flexible working. Regarding the motivational literature, the following terms were used: SDT, self-determination theory, competence, relatedness, autonomy, and motivation. These terms were used in a

silo or as combinations of the different literature fields and concepts. Searches made use of truncations¹⁵. Surprisingly, an explicit and intentional usage of cross-disciplinary knowledge was close to non-existent between the fields of teleworking and SDT. Therefore, aspects studied within the respective field were thematically related.

Secondly, a survey design (Bryman & Bell, 2015) was applied to gather data, which laid the foundation for hypothesis testing. In distributing the survey, a cross-sectional design was applied (Bryman & Bell, 2015), to allow variations between cases and draw inferences about these variations and differences on a general level. The survey was created through Qualtrics¹⁶ (2022) and distributed online through Prolific¹⁷ (2022) on Friday the 18th of March 2022. Consequently, an online self-completion (Bryman & Bell, 2015) approach was chosen. In relation to the comparable approach of conducting structured interviews, this approach allowed a larger data quantity, without the risk of noise in the data induced through interviewer effects. The self-completion survey approach is however not without its downsides (Bryman & Bell, 2015) being subject to possible social-desirability bias and acquiescent responding (Kreitchmann et al., 2019; Paulhus 1991). These downsides were limited by some choices in the survey design and distribution. Firstly, in order for us to better grasp the respondents' reality, they were allowed but not forced, to leave comments. Secondly, our contact information was provided in the survey. Thus, respondents could contact us in case of uncertainty. However, no one did. Lastly, other downsides of the survey approach such as uncertainty of who answers the survey and low response rates were managed through the use of Prolific. Through their provision of incentivised respondents with personal accounts and stated demographics, these downsides were considered marginal. More specifically, to counter social-desirability bias, the anonymity of survey responses was clearly communicated (Krumpal, 2011; Nederhof, 1985). The respondents' anonymity was important both to allow for truthful answers from respondents, but also to ensure an ethical treatment of the answers. This was not considered to have any drawbacks, as the identity of the respondents are not of interest to the readers beyond the overarching demographic descriptives of the final sample. In considering acquiescence bias, the survey was made sure not to be too lengthy. Additionally, a 7-point response format ensured a middle alternative. Some reverse-coded response items were included through the usage of already established response scales and is an additional aspect that could help counter this type of bias (Paulhus, 1991; Podsakoff et al., 2003). An instructional manipulation check (Oppenheimer et al., 2009) was added to detect satisficing.

¹⁵ Truncations (*) allow the search tool to find the applicable word used in different ways, for example motivat* would allow for motivate, motivation, motivational.

¹⁶ Qualtrics is a web-based software, where users can create distributable surveys.

¹⁷ Prolific is a survey distribution tool which connects researchers with data.

3.3 Survey Design

3.3.1 Likert scale and response format

A 7-point Likert response format, ranging from “strongly disagree to strongly agree”, is consistently used in the survey design. The usage of Likert scales has long been thoroughly debated by researchers, addressing aspects such as the ideal amount of scale item points and how such generated data may be treated for further analysis (Cox III, 1980; Dawes, 2007; Jamieson, 2004; Joshi et al., 2015).

The 7-point Likert response format was used as it is well established in previous research designs. As such, the amount of item points is deemed sufficient to provide a spectrum of alternatives for respondents to find an alternative that reasonably corresponds with their objective reality (Joshi et al., 2015). Accordingly, the Likert items are also symmetrical with a neutral alternative in the middle. In short, the 7-point response option has been shown to both perform well in terms of reliability while also being preferred by respondents (Preston & Colman, 2000).

Part of the debate around Likert scales and items concerns the response data and whether it should be treated as interval or ordinal, having implications for which statistical methods, parametric or non-parametric, may be used for analysis (Joshi et al., 2015; Norman, 2010; Sullivan & Artino, 2013). In short, there are compelling arguments that Likert scales, in which several scale items are compounded into a composite score, provide an interval estimate. This consequently allows for the usage of parametric statistical methods in data analysis (Carifio & Perla, 2007; Norman, 2010; Joshi et al., 2015).

3.3.2 Variables & scales

3.3.2.1 Dependent variable

Basic need satisfaction

Many different response scales of need satisfaction have been suggested within the field of SDT, all with benefits and shortcomings (Van den Broeck et al., 2010, Van den Broeck et al., 2016). A common downside of scales has been their application to a new context in which they were not intended and accordingly not validated (Tafvelin & Stenling, 2018), leading to inconsistent ad-hoc usage of scales (Van den Broeck et al., 2010). Therefore the 16-item Work-related Basic Need Satisfaction scale (W-BNS) was provided as a step away from relying on ad hoc measures. (Van den Broeck et al, 2010). The scale consists of three subscales: Autonomy, Competence and Relatedness,

with 4-6 items for each. The Autonomy subscale includes items such as “I feel free to do my job the way I think it could be best done”, Competence items such as “I really feel competent at my work” and Relatedness items such as “At work, I feel part of a group” (Appendix 2, block 9). The W-BNS is focused on, and validated for, the work context (Van den Broeck et al., 2010). Therefore, it was chosen for this study, to measure need satisfaction in both the telework and office context and adapted accordingly. While the scale may be used to indicate need frustration (Van den Broeck et al., 2014), it is not a measure of need frustration specifically, which is a drawback (Olafsen et al., 2015; Van den Broeck et al., 2016). Due to this study’s focus of measuring need satisfaction, its downsides of being unable to accurately measure need frustration could be accepted.

3.3.2.2 Independent variables

Telework extent

Telework extent was measured by letting respondents indicate how many hours on average were spent working from an office and at “home or other” place per week, (Appendix 1, block 2). A percentage of telework hours, the hours spent working away from the office, was calculated from this. This was repeated for preferred telework extent, where respondents were able to indicate how they would distribute their hours in each context if given the choice.

Interdependence

Interdependence was measured using two scales, one for Initiated interdependence¹⁸ and one for Received interdependence¹⁹, consisting of three scale items respectively. These were drawn from Morgeson & Humphrey’s (2006) Work Design Questionnaire (WDQ)²⁰. Both these constructs were included to understand an individual's overall interdependence. Items for Initiated interdependence included items such as “Other jobs depend directly on my job.” and Received interdependence used items such as “My job cannot be done unless others do their work.” (Appendix 2, block 3).

Interruptions

For interruptions, no appropriate validated scales were found. Rather the respondents were asked to indicate to which degree they agreed with “I encounter many interruptions during work.” in the telework and office context respectively (Appendix 2, block 4).

¹⁸ Measuring how dependent others’ jobs are of the individual’s job

¹⁹ Measuring how dependent the individual’s job is of other’s job

²⁰ 5/6 items of these constructs originate from Kiggundu (1983) and have been adapted.

Choice

For Choice, respondents were asked to indicate to which degree they agreed with three statements such as “I feel like I have a choice of where to conduct my work, whether that is in the office, at home or at another place.” (Appendix 2, block 2).

Fairness

For Fairness, respondents were asked to indicate to which degree they agreed with two statements like “My organisation's policy towards remote working is fair.” (Appendix 2, block 2).

Other variables of interest

Common demographic variables were included such as Age, Gender, Time held in current work role and Income (Appendix 2, block Background information.)

3.3.3 The pilot study

A small (N=5) pilot survey (Bryman & Bell, 2015) was performed before distributing the survey, after receiving and incorporating supervisor feedback. The pilot survey consisted of 61 questions in total, all questions and information given in English. The initial information regarding what areas the survey would treat was important for the respondents to be able to take an active decision in its participation. While the topics are not considered particularly harmful, it may be uncomfortable for certain individuals. If this was the case, they could discontinue their participation.

Feedback from respondents of the pilot study revealed that the survey was too long, included too many similar questions and that it was difficult to know how much of the survey was left to complete. Further, some comments on a lack of clarity were made. This feedback was taken into consideration for the main study as will be explained below.

3.3.4 Final survey design

The final survey (Appendix 2) consisted of 50 questions in total, which is a reduction in number compared to the pilot study. Additional improvements first included those of clarity. Information on how to interpret the two contexts in the beginning of relevant sections was added. Further, an instruction stating how the respondents were to indicate their responses was added to sections using the Likert scale or response format. Secondly, some additional question items were added to improve the validity of the Choice construct. Thirdly, while the survey was shortened overall by combining the questions for the telework and office context into one question with two sub-questions, many questions were still similar due to the scales utilised. As a measure to improve respondents' patience with seemingly repetitive questions, a short motivation of why some questions were similar was given

in relevant sections. Fourth and lastly, a progress bar was added to allow respondents to see how large a share of the questions they had completed.

3.3.3 Reliability and validity considerations

While aspects of reliability and validity have been addressed in the elaboration of survey design, more specific considerations are detailed in the following two sections.

3.3.3.1 Validity

To ensure a sufficient degree of validity, established scales were used to the greatest extent possible. As an additional layer of validity assessment, the scale items of the W-BNS, the two forms of interdependence, Choice and Fairness, were subjected to an exploratory factor analysis to examine the distinctiveness of constructs.

The appropriateness of factor analysis was first considered (Appendix 3). The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) was sufficiently high at 0.822 (Field, 2009), indicating that a sufficient proportion of variance could be explained by underlying factors. In addition, each individual KMO-value in the Anti-image correlation matrix exceeded the lower acceptable threshold of 0.5, and Bartlett's Test of Sphericity was significant ($p < .001$), indicating the suitability of the data for factor analysis (Field, 2009).

Because the factor analysis is used as a validity assessment, the scale items supposed to measure each construct: Autonomy, Competence, Relatedness, Received interdependence, Initiated interdependence, Choice, and Fairness should load on separate factors, or at least such a similar pattern should emerge. Accordingly, the a priori criterion for the number of factors extracted was set at seven. The factor analysis extracted seven factors using principal axis factoring. Along with the recommendation of Tabachnick et al., (2007), the analysis was first conducted using an oblique rotation, in this case, direct oblimin. Factor correlations were then observed and because some exceeded .32, no changes to the rotation method were made.

The pattern matrix (Appendix 3) was analysed with consideration to the “.40–.30–.20”- rule as put forth by Howard (2016) which recommends that variables should load at least .40 on its primary factor, less than .30 on alternative ones and that differences in loadings should be above .20 if the variable loads on more than its primary factor. As expected, Received interdependence, Initiated interdependence, Choice and Fairness all loaded significantly on different unique factors with no cross-loadings, indicating that these are indeed distinct constructs. All the Relatedness scale items loaded onto a unique factor without cross-loadings, although two of the six items were just slightly

below .40. This still indicates that Relatedness is a distinct construct. The four Competence scale items all loaded highly onto the same factor with no cross-loadings. However, two of the Autonomy scale items loaded just above .4 onto the Competence factor, one of these being a cross-loader with the primary Autonomy factor. As such, the current scale items for Autonomy seem to interact slightly with Competence. It makes sense to find some overlap in this manner, due to the common theoretical ramifications of the basic needs.

Replacing the basic need scale items with the corresponding ones for the telework context showed a similar pattern. Now, however, the factor structure was not quite as distinct as in the office context (Appendix 3). The W-BNS items were distinct from other items but had some internal interactions. Again, Autonomy interacted slightly with Competence, but Relatedness was split on two unique factors.

All in all, there are strong indications that the Initiated interdependence, Received interdependence, and Choice measure distinctly different constructs as compared to the W-BNS. The three subscales of the W-BNS also seem to measure distinct constructs, but this is less apparent for the scales contextualised to the teleworking context. Additionally, the poorer factor structure with the teleworking context items also makes sense as the W-BNS was not constructed by Van den Broeck et al. (2010) with regard to a teleworking context. The above exploration of validity did not result in any item removal. The implications for the results will be commented upon in the discussion.

Measures were taken to increase external validity while maintaining the practical feasibility of data collection. The usage of a participant pool from Prolific allowed for potential answers from participants with varying backgrounds from diverse industries, although geographically restricted on the country level. While this still impacts generalisability assumptions it did provide a set of participants which avoided characteristics otherwise associated with the typical convenience sample. Participants were anonymous as well as spatially and relationally detached from the thesis writers and each other.

The usage of established scales along with the provision of survey question items, documentation of data analysis and method is deemed sufficient to ensure the replicability of this study.

3.3.3.2 Reliability

The internal consistency aspect of reliability for used Likert scales is measured using Chronbach's alpha (Chronbach, 1951; Gliem & Gliem, 2003), with acceptability criteria of .70 (Graham, 2006). All constructs passed this criterion, except the teleworking version of the Autonomy subscale (Appendix

4). However, no significant improvement in alpha coefficient nor improvement in factor structure could be achieved through scale item removal. Therefore, no revisions were made.

3.4 The survey sample

3.4.1 Sampling criteria

Measures were taken to allow a high degree of representativeness in the sample. The potential respondent pool was limited to knowledge workers, people who physically are likely to be able to telework. To allow for comparability between answers, avoid too much complexity and allow for a large pool of potential respondents' geographical boundaries were set to include Scandinavia and the UK, both areas with good English proficiency. While these considerations are deemed to bring more benefits than limitations, it should be noted that the geographical boundaries of the sample also imply the spatial boundaries of generalisation.

3.4.2 Sample and adjustments

The initial sample (N=258) required some manual filtering before analysing the data. Respondents who spent less than 3 minutes on the survey were removed (n=3) as they reasonably could not have given the survey the time required to answer it properly. In addition, those on parental leave (n=4) and unable to telework due to their roles (n=33) were removed. In total then (n=40) responses were removed, leaving a sample of (n=218). All participants in the final sample successfully passed the instructional manipulation check.

3.4.3 Overview of sample

The final sample shows that the majority of the sample are female (80.7%), from the UK (94%) and are full time workers (71.6%). Having a majority women sample may be an issue when comparing need satisfaction differences between the genders. This overview indicates the frame of generalisability of our findings.

Table 1. Sample overview.

	Characteristic	N(218)	%	cum %
Gender	Female	176	80.7%	80.7%
	Male	41	18.8%	99.5%
	Other	1	.5%	100%
Country	United Kingdom	205	94%	94%
	Sweden	4	1.8%	95.9%
	Denmark	4	1.8%	97.7%
	Finland	4	1.8%	99.5%
	Norway	1	0.5%	100%
Work Extent	Full-time	156	71.6%	71.6%
	Part-time	62	28.4%	100%

The mean age and work hours appear representative for the average workers in general. Interesting is that the mean teleworking extent is approximately 50% which shows that there prevails experience of both teleworking and office working on average. Possible limitation of representativeness is implied by a relatively low mean income and time in their current roles, which were skewed towards the lower end (Appendix 5).

Table 2. Sample overview, cont.

Characteristic	M	SD
Age (years)	35.90	1.16
Work hours (hours per week)	35.06	13.41
Telework hours - actual (percentage)	.53	.40
Telework hours - preferred (percentage)	.65	.33
Income (£, per month)	2114.17	2826.85
Time in work role (years)	4.09	4.46

N = 218

4. Results and analysis

4.1.1 Analytical tools

IBM SPSS Statistics version 28 was used to analyse the data gathered through Prolific. The data was downloaded into an excel file and uploaded to SPSS.

4.1.2 Preparation of data

After importing the data necessary adjustments were made and some variables were manually re-coded. For example, reverse score items were un-reversed.

Further (n=11) responses were adjusted based on our best judgement to understand the respondents' intended answers, (n=1) respondents indicated having worked 110 years at the current employer, which was recorded as 10 years²¹. Regarding salary (n=10) respondents had presumably interpreted the item incorrectly. The item requested the average monthly income, rather than yearly which is commonplace to use in the UK. There were 10 extreme outliers for this item, all from UK respondents, who were believed to have indicated their yearly income. These salaries were divided by 12.

The scale items used to measure each psychological need were averaged into compound scores for each need variable resulting in three different need scores for each of the two contexts, office and telework. To get unified measures of need satisfaction, these compound scores given by respondents for the two contexts were weighted, based on the percentage of work time spent in each context (Appendix 4.2).

Various statistical tests were conducted as will be present, and assumptions of these were considered and controlled for as well as data prepared where necessary. First, assumptions for simple linear regression (Ernst & Albers, 2017) were controlled (Appendix 6). Accordingly, for three regressions, with telework extent as independent variable and each of the three basic needs as dependent variables, scatter plots were generated. Based on these, it was indicated that only a slight linear relationship seemed to exist between the dependent variable and the independent ones. Nonetheless, no other regression model seemed to match the data points better. P-P plots were generated as well as scatter plots of standardised residuals versus predicted values. This allowed visual inspection of the

²¹ It is possible that 11 years was the intended response. The implied risk with interpreting the years wrong was considered low.

normality of error terms and for presence of homoscedasticity respectively. No strong deviations were observed. Independent observations were assumed as data was collected at one point of time.

Furthermore, in preparation for post-hoc tests, individuals were divided into seven groups, based on their teleworking extent. The groups Only telework and Only office spent 100% of their working time in these respective contexts. These two groups were deemed important to keep separate as they may be different from those dividing their hours between the two contexts. The other five groups, High office, Moderate office, Even split, High telework and Moderate telework, were created with equal distribution with regards to a teleworking extent between these extremes.

Table 3. Work groups based on teleworking extent.

Group	Teleworking extent	N(218)	%	cum %
Only office	$X = 0\%$	54	24.8	24.8
High office	$.00\% < X \leq 19.8\%$	16	7.3	32.1
Moderate office	$19.8\% < X \leq 39.6\%$	22	10.1	42.2
Even split	$39.6\% < X \leq 59.4\%$	22	10.1	52.3
Moderate telework	$59.4\% < X \leq 79.2\%$	38	17.4	69.7
High telework	$79.2\% < X < 100\%$	11	5.0	74.8
Only telework	$X = 100\%$	55	25.2	100.0

To know how to compare these groups, the assumption of homogeneity of variances was tested, using Levene's statistic based on means. For Autonomy, the null hypothesis of equal variances was rejected ($F=2.533$, $p=.022$), thus the non-parametric Welch t-test was used to compare group means in the hypothesis testing. The null hypothesis of equal variances was not rejected for Competence ($F=1.401$, $p=.216$) or Relatedness ($F=1.037$, $p=.402$), why the parametric ANOVA test was used to compare group means for these needs.

Table 4. Levene's test

Underlying variable	Mean	Skewness	Kurtosis	<i>Levene statistic</i>	
				F	P
Autonomy	4.890	-.288	-.291	2.533	.022
Competence	5.853	-.595	.654	2.566	.216
Relatedness	4.664	-.141	-.551	1.037	.402

N = 218

4.2 Hypothesis testing

For an overview of all results, see Appendix 1.

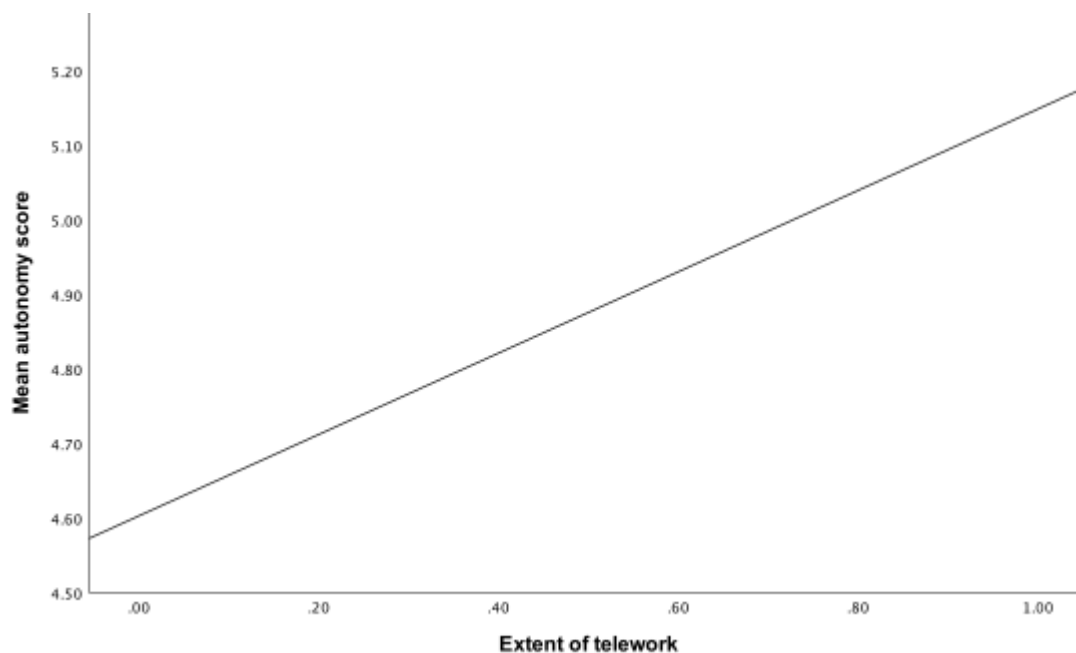
4.2.1 Autonomy in teleworking

The regression between Extent of telework and Autonomy ($\beta = .546$, $p < .001$) was significant ($R^2 = .057$, $F(1, 216) = 13,001$, $p < .001$) such that an increased telework extent leads to increased autonomy satisfaction. However, an R^2 of 5.7% indicates weak explanatory power.

Table 5. Regression model 1, Autonomy.

Dependent: Autonomy	R	R ²	F	p	Std. error of estimate	β	Std. error	t	p	95%CI LL, UL
Overall model	.238	.057	13.001	<.001	.884					
Constant						4.603	.100	46.165	.000	4.406 4.799
Extent of telework						.546	.151	3.606	<.001	.247 .844

N = 218, Df1 = 1, Df2 = 216



Note: Extent of telework in %

Figure 13. Regression line, Autonomy.

H1a: There is a positive effect between telework extent and autonomy satisfaction, such that autonomy satisfaction increases for higher degrees of telework.

- SUPPORTED

To further explore this result, post-hoc tests were conducted to compare the seven group means. First, a diagram was plotted to see any visual differences in mean scores. The diagram indeed indicates a positive relationship between a higher extent of teleworking and increased levels of autonomy satisfaction. It also illustrates the largest marginal benefit of telework on autonomy satisfaction in the medium range of telework extent.

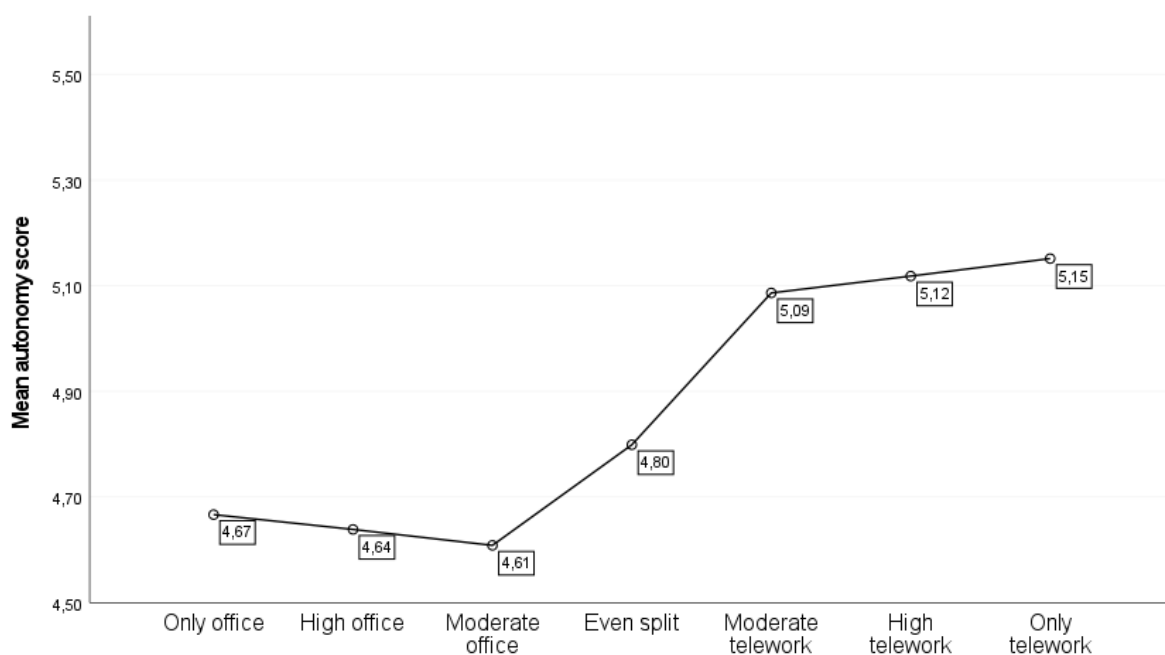


Figure 14. Group means, Autonomy.

Secondly, to test the differences statistically, Welch's t-test was used. The mean Autonomy score did not differ significantly according to the Welch t-test ($t(6, 60.360) = 2.246, p = .051$). As such, no groupwise comparisons were made. However, with $p = .051$, the hypothesis of equal means was close to being rejected, entertaining the idea that there may be a difference between groups, although this could not be supported at this point.

To test the moderating effect of choice on the relationship between teleworking extent and autonomy satisfaction, Hayes' (2013) process macro model 1 was used. Process uses bootstrapping, which overcomes potential issues of non-normality. For the moderation tests the number of bootstrap re-

samples were set to (n=5000). The results showed that Choice and Extent of telework together explained 13.1% of the variation in Autonomy ($R^2 = .131$, $F(3, 214) = 10.730$, $p < .001$). In this regression model, Extent of telework ($\beta = .309$, $t(214) = .864$, $p = .389$) did not emerge as a significant predictor, whereas Choice ($\beta = .166$, $t(214) = 3.346$, $p = .001$) did, such that an increase in Choice resulted in a slight increase in Autonomy. As for moderation, Choice did not have a significant effect on the model ($R^2_{\text{change}} = .002$, $F(1, 214) = .447$, $p = .505$). Thus, while it is interesting to see that choice has a significant impact on autonomy itself, the hypothesised moderating effect could not be supported.

Table 6. Regression model 2, Autonomy.

Dependent: Autonomy	R	R ² (R ² _{change})	F	p	MSE	β	Std. error	t	p	95%CI LL, UL
Overall model	.362	.131	10.730	<.001	.727					
Constant						4.171	.167	24.929	.000	3.842 4.501
Extent of telework						.309	-.357	.864	.389	-.395 .013
Choice						.166	.050	3.346	.001	.068 .264
Interaction effect		(.002)	.447			-.052	.077	-.669	.505	-.204 .101

N = 218, Df1 = 3, Df2 = 214

H1b: Choice positively moderates the relationship between the extent of telework and the autonomy satisfaction, such that higher levels of choice accentuate the positive relationship between the teleworking extent and autonomy satisfaction.

- NOT SUPPORTED

With consideration to these results, where choice came out as a significant predictor of autonomy, while the extent of telework did not, we used a simple regression model to test the effect of choice, controlling for the extent of telework. Interestingly, it turns out that Choice ($R^2 = .128$, $F(1, 216) = 31.600$, $p < .001$) is a better predictor of Autonomy than Extent of telework. In a stepwise addition Fairness was added to the model. As this should impact how well the employees can identify with the company policy. Indeed, by adding Fairness the R-square value is improved ($R^2 = .166$, $F(2, 215) = 21.427$, $p < .001$). However, when the Extent of telework was added in a final step, it did not contribute much to the R-square value ($R^2 = .167$, $F(3, 214) = 14.258$, $p < .001$) and as an individual

predictor it was not significant ($\beta = .056$, $t(3, 214) = .316$, $p = .753$). Thus, regardless of which context the employees choose to work in, given the choice to telework significantly improves their autonomy satisfaction. The same is true if the company can communicate their telework policy in a way that the employees can resonate with.

Table 7. Regression models 3-5, Autonomy.

Dependent: Autonomy	R	R ²	F	p	Std. error of estimate	β	Std. error	t	p	95%CI LL, UL
Overall model 3	.357	.128	31.600	<.001	.850					
Constant						4.250	.128	33.292	<.001	3.998 4.502
Choice						.0153	.027	5.621	<.001	.099 .206
Overall model 4	.408	.166	21.427	<.001	.833					
Constant						3.738	.205	18.232	<.001	3.334 4.142
Choice						.091	.033	2.762	.006	.026 .156
Fairness						.144	.046	3.154	.002	.054 .234
Overall model 5	.408	.167	14.258	<.001	.835					
Constant						3.738	.205	18.196	<.001	3.333 4.143
Choice						.086	.037	2.284	.023	.012 .160
Fairness						.143	.046	3.109	.002	.052 .233
Extent of telework						.056	.177	.316	.753	-.293 .404

N = 218, Df1₁ = 1, Df2₁ = 216; Df1₂ = 2, Df2₂ = 215; Df1₃ = 3, Df2₃ = 214

4.2.2 Competence in teleworking

The regression between Extent of telework and Competence was not significant ($R^2 = .000$, $F(1, 216) = .032$, $p < .859$) and the R^2 value indicates non-existent explanatory power. Thus, the extent of telework does not appear to impact competence satisfaction.

Table 8. Regression model 6, Competence.

Dependent: Competence	R	R ²	F	p	Std. error of estimate	β	Std. error	t	p	95%CI LL, UL
Overall model	.012	.000	.032	.859	.757					
Constant						5.841	.085	68.407	<.001	5.673 6.010
Extent of telework						.023	.130	.178	.859	-.232 .278

N = 218, Df1 = 1, Df2 = 216

H2a: There is a positive effect between telework extent and competence satisfaction, such that competence satisfaction increases for higher degrees of telework.

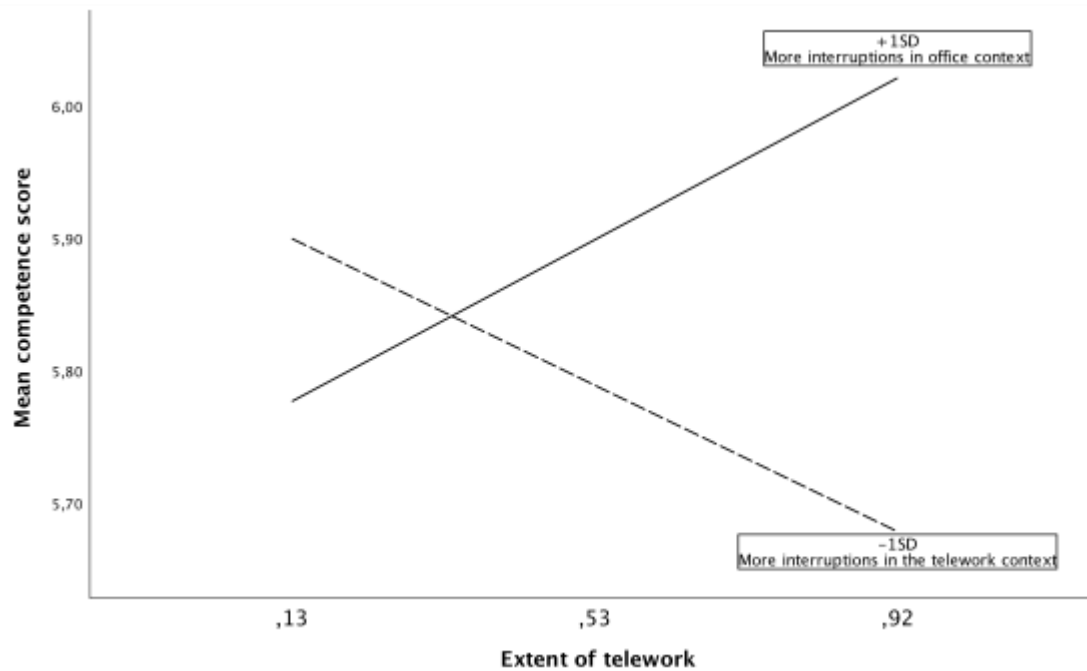
- NOT SUPPORTED

Before testing the hypothesis, the relative interruptions between the two contexts were compared. In general, people have more interruptions in the office context compared to the telework context (Appendix 7).

To test how relative interruptions²² moderates the relationship between extent of teleworking and competence satisfaction, Hayes (2013) process model 1 was used.

The results showed that Relative interruptions and Extent of telework together explained 2.9% of the variation in Competence ($R^2 = .029$, $F(3, 214) = 2.089$, $p = .103$), however the model was not significant. Extent of telework ($\beta = -.162$, $t(214) = -1.087$, $p = .278$) was again not a significant predictor and neither was Relative interruptions ($\beta = -.047$, $t(214) = -1.241$, $p = .216$). However, treating Relative interruptions as a moderator improved the model ($R^2_{\text{change}} = .025$, $F(1, 214) = .545$, $p = .021$). While caution should be taken to interpret the results due to the insignificant overall model, Figure 15 indicates some intuition in regard to this moderating effect. This moderation effect implies that the context with relatively less interruptions satisfies the need for competence relatively better.

²² Relative interruptions = interruptions(office) - interruptions(telework)



Note: Extent of telework in %

Figure 15. Moderation graph, Competence; Interruptions.

Table 9. Regression model 7, Competence.

Dependent: Competence	R	R ² (R ² _{change})	F	p	MSE	β	Std. error	t	p	95%CI LL, UL
Overall model	.169	.029	2.089	.103	.562					
Constant						5.896	.094	62.613	<.001	5.711 6.082
Extent of telework						-.162	.149	-1.087	.278	-.456 .132
Relative interruptions						-.047	.038	-1.241	.216	-1.261 .027
Interaction effect		(.025)	5.449			.137	.059	2.334	.021	.021 .253

N = 218, Df1 = 3, Df2 = 214

H2b: Interruptions moderate the relationship between telework extent and competence satisfaction, such that those with relatively more interruptions at the office experience higher competence satisfaction with a higher extent of teleworking

- SUPPORTED

To test whether the degree of interdependence moderates the relationship between teleworking extent and competence satisfaction, a moderation analysis using Hayes (2013) model 2 was conducted. The two forms of interdependence and Extent of telework together explained .2% of the variation in Competence ($R^2 = .002$, $F(5, 212) = .063$, $p = .997$) but the model did not reach significance. Neither the interaction of Received interdependence ($R^2_{\text{change}} = .001$, $F(1, 212) = .191$, $p = .662$) nor Initiated interdependence ($R^2_{\text{change}} = .001$, $F(1, 214) = .239$, $p = .625$) showed a significant moderating effect (Appendix 10).

Table 10. Regression model 8, Competence.

Dependent: Competence	R	R ² (R ² _{change})	F	p	MSE	β	St. error	t	p	95%CI LL, UL
Overall model	.039	.002	.063	.997	.583					
Constant						5.834	.315	18.537	<.001	5.214 6.455
Extent of telework						.029	.485	.061	.952	-.926 .985
Received interdep.						.026	.073	.348	.728	-.119 .170
Interaction effect 1		(.001)	.191			-.046	.106	-.437	.663	-.255 .163
Initiated interdep.						-.027	.069	-.386	.700	-.162 .109
Interaction effect 2		(.001)	.239			.049	.100	.489	.625	-.149 .246

N = 218, Df1 = 5, Df2 = 212

H2c: The degree of interdependence negatively moderates the relationship between telework extent and competence satisfaction, such that higher degrees of interruptions dampen the effect of teleworking on competence satisfaction.

- NOT SUPPORTED

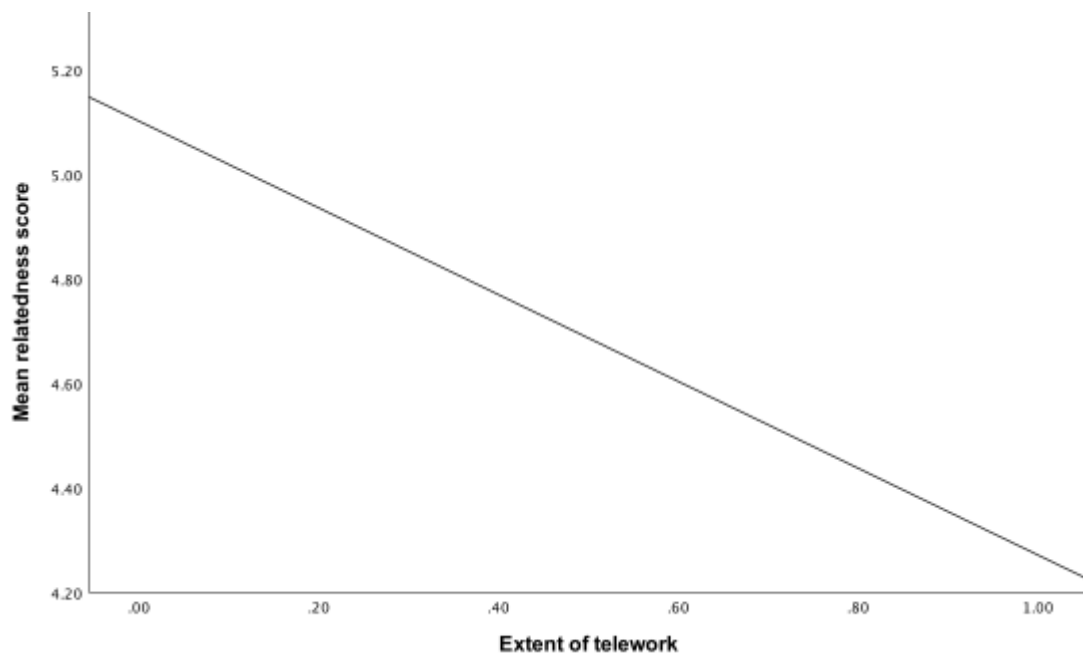
4.2.3 Relatedness in teleworking

The regression between Extent of telework and Relatedness was significant ($R^2 = .089$, $F(1, 216) = 21,169$, $p < .001$) such that increases in Extent of telework reduces Relatedness. However, an R^2 of 8.9% indicates weak explanatory power.

Table 11. Regression model 9, Relatedness.

Dependent: Relatedness	R	R ²	F	p	Std. error of estimate	β	Std. error	t	p	95%CI LL, UL
Overall model	.299	.089	21.169	<.001	1.054					
Constant						5.102	.119	42.919	<.001	4.867 5.336
Extent of telework						-.830	.180	-4.601	<.001	-1.186 -.474

N = 218, Df1 = 1, Df2 = 216



Note: Extent of telework in %

Figure 16. Regression line, Relatedness.

H3: There is a negative effect between telework extent and relatedness satisfaction, such that relatedness satisfaction decreases for higher degrees of telework.

- SUPPORTED

Again, post hoc analyses were conducted to further study the effects on a group level. To visualise the mean Relatedness scores between groups a diagram was created. The diagram indeed indicates different relatedness satisfaction between the groups.

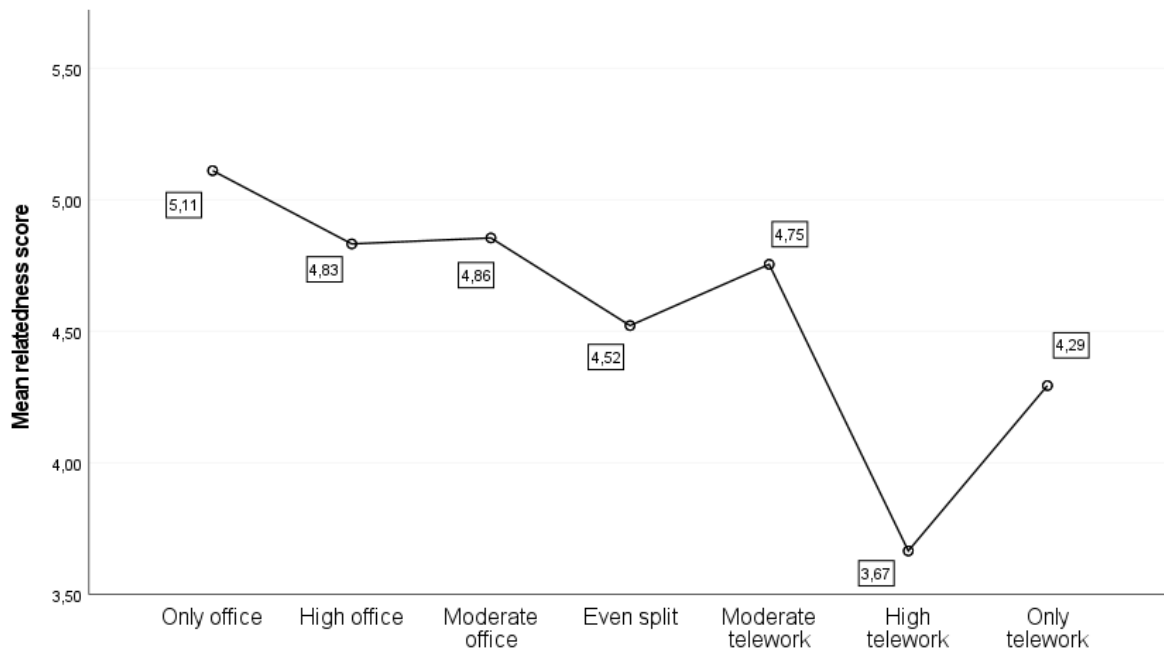


Figure 17. Group mean, Relatedness.

Secondly, an ANOVA-test showed significant ($F(6, 211) = 4.474, p < .001$) differences in Relatedness scores between the groups. A Bonferroni test (Appendix 8) allowed for groupwise comparisons, surfacing significant differences between the groups “Only office” to “High telework” ($p < .001$) and “Only telework” ($p = .001$). The largest difference in need satisfaction between groups thus seems to be between the low and high extent of telework, and lower negative effects are seen for the lower degrees of telework.

Table 12. ANOVA for Relatedness satisfaction between telework groups.

Predictor	Sum of Squares	Mean square	F	p	η^2	95% CI LL, UL
Between groups	31.316	5.219	4.747	<.001	.119	.031 .181
Within groups	231.999	1.100				
Total	263.316					

N = 218

4.2.4 The preferred work modality

Given these results, with increased autonomy satisfaction in the telework context, no change of competence and decreased relatedness, it was of interest to see which work modality was preferred (Appendix 9 & Table 4). Interestingly, the most preferred way of working was a Hybrid mode (58.7%), followed by Only telework (30.3%) and Only office (11%). In addition, a paired samples t-test shows that the preferred ($M = .645$, $SD = .334$) extent of telework is significantly higher than the actual ($M = .527$, $SD = .396$) extent ($t(217) = -5.823$, $p < .001$) for the individual respondents.

4.2.5 Age as a moderator

To test if age positively moderates the relationship between teleworking extent and each of the need satisfactions, Hayes (2013) process model 1 was used. The results showed that Age ($\beta = .011$, $t(214) = 1.161$, $p = .247$) and Extent of telework ($\beta = .380$, $t(214) = .700$, $p = .485$) together explained 7,5% of the variation in Autonomy ($R^2 = .075$, $F(3, 214) = 5.802$, $p = .001$). The overall model was significant, but not the individual predictors. No interaction effect was found ($R^2_{\text{change}} = .000$, $F(1, 214) = .047$, $p = .829$) (Appendix 10).

Table 13. Regression model 10, Autonomy.

Dependent: Autonomy	R	R ² (R ² _{change})	F	p	MSE	β	Std. error	t	p	95%CI LL, UL
Overall model	.274	.075	5.802	.001	.773					
Constant						4.244	.330	12.862	<.001	3.593 4.894
Extent of telework						.380	.543	.700	.485	-.691 1.451
Age						.011	.009	1.161	.247	-.008 .030
Interaction effect		(.000)	.047			.003	.015	.216	.829	-.026 .032

N = 218, Df1 = 3, Df2 = 214

As for competence satisfaction, Age ($\beta = .011$, $t(214) = 1.405$, $p = .162$) and Extent of telework ($\beta = -.157$, $t(214) = -.338$, $p = .736$) together explained 2.9% of the variation in Competence ($R^2 = .029$, $F(3, 214) = 2.135$, $p = .097$). Neither the overall model nor the individual predictors were significant. No interaction effect was found ($R^2_{\text{change}} = .000$, $F(1, 214) = .078$, $p = .780$) (Appendix 10).

Table 14. Regression model 11, Competence.

Dependent: Competence	R	R ² (R ² _{change})	F	p	MSE	β	Std. error	t	p	95%CI LL, UL
Overall model	.171	.029	2.135	.097	.562					
Constant						5.471	.281	19.454	<.001	4.916 6.025
Extent of telework						-.157	.463	-.338	.736	-1.069 .756
Age						.011	.008	1.405	.162	-.005 .027
Interaction effect		(.000)	.078			.004	.012	.280	.780	-.021 .028

N = 218, Df1 = 3, Df2 = 214

Age ($\beta = .007$, $t(214) = .615$, $p = .116$) and Extent of telework ($\beta = -1.028$, $t(214) = -1.577$, $p = .162$) together explained 9.6% of the variation in Relatedness ($R^2 = .096$, $F(3, 214) = 7.590$, $p = .000$). As such, the overall model was significant but not the individual predictors. No interaction effect was found ($R^2_{\text{change}} = .000$, $F(1, 214) = .064$, $p = .800$) (Appendix 10)..

Table 15. Regression model 12, Relatedness.

Dependent: Relatedness	R	R ² (R ² _{change})	F	p	MSE	β	Std. error	t	p	95%CI LL, UL
Overall model	.310	.096	7.590	<.001	1.112					
Constant						4.874	.396	12.317	<.001	4.094 5.654
Extent of telework						-1.028	.652	-1.577	.116	-2.312 .257
Age						.007	.011	.615	.539	-.015 .029
Interaction effect		(.000)	.064			.004	.018	.254	.800	-.030 .039

N = 218, Df1 = 3, Df2 = 214

As such, there is no moderating effect of age, on the relationship between teleworking extent and need satisfaction. Thus, the hypothesis was not supported.

H4: Age positively moderates the relationship between the teleworking extent and basic need satisfaction, such that increasing age accentuates the relationship between teleworking extent and the need satisfaction for autonomy and competence, while it dampens the relationship for relatedness.

- NOT SUPPORTED

4.2.6 Gender as a moderator

To test the moderating effect of gender, Hayes process model 1 was used. Extent of telework ($\beta = -.091$, $t(213) = -.127$, $p = .899$) and Gender ($\beta = -.007$, $t(213) = -.028$, $p = .978$) together explained 6.4% of the variation in Autonomy ($R^2 = .068$, $F(3, 213) = 5.182$, $p = .002$). The overall model was significant, but not the individual predictors. No significant interaction effect was found ($R^2_{\text{change}} = .004$, $F(1, 213) = .864$, $p = .354$) (Appendix 10).

Table 16. Regression model 13, Autonomy.

Dependent: Autonomy	R	R ² (R ² _{change})	F	p	MSE	β	Std. error	t	p	95%CI LL, UL
Overall model	.261	.068	5.182	.002	.783					
Constant						4.613	.480	9.619	<.001	3.668 5.558
Extent of telework						-.091	.713	-.127	.899	-1.495 1.314
Gender						-.007	.258	-.028	.978	-.516 .502
Interaction effect		(.004)	.864			.358	.385	.930	.354	-.401 1.118

N = 217, Df1 = 3, Df2 = 213

Extent of telework ($\beta = -.557$, $t(213) = -.910$, $p = .364$) and Gender ($\beta = -.210$, $t(213) = -.947$, $p = .345$) together explained .5% of the variation in Competence ($R^2 = .005$, $F(3, 213) = .352$, $p = .788$). The overall model was not significant and neither were the individual predictors. No significant interaction effect was found ($R^2_{\text{change}} = .004$, $F(1, 213) = .943$, $p = .333$) (Appendix 10).

Table 17. Regression model 14, Competence.

Dependent: Competence	R	R ² (R ² _{change})	F	p	MSE	β	Std. error	t	p	95%CI LL, UL
Overall model	.070	.005	.352	.788	.578					
Constant						6.222	.412	15.095	<.001	5.410 7.035
Extent of telework						-.557	.613	-.910	.364	-1.765 .650
Gender						-.210	.222	-.947	.345	-.648 .227
Interaction effect		(.004)	.943			.322	.331	.971	.333	-.331 .974

N = 217, Df1 = 3, Df2 = 213

As such, neither for autonomy nor competence was there a moderating effect of gender.

H5b: Gender moderates the relationship between teleworking extent and autonomy and competence need satisfaction, such that the relationship is stronger for women than men.

- NOT SUPPORTED

4.2.6 Time in role as a moderator

To test if there is a positive moderating effect of the time one has spent in one's role (+) on the relationship between teleworking extent and autonomy and competence satisfaction, Hayes' process, model 1 was used.

Extent of telework ($\beta = .428$, $t(214) = 2.075$, $p = .039$) and Time in role ($\beta = -.005$, $t(214) = -2.308$, $p = .021$) together explained 6.1% of the variation in Autonomy ($R^2 = .061$, $F(3, 214) = 4.664$, $p = .004$). Of the individual predictors, Extent of telework was significant in this model. No significant interaction effect ($R^2_{\text{change}} = .003$, $F(1, 214) = .671$, $p = .414$) was found (Appendix 10).

Table 18. Regression model 15, Autonomy.

Dependent: Autonomy	R	R ² (R ² _{change})	F	p	MSE	β	Std. error	t	p	95%CI LL, UL
Overall model	.248	.061	4.664	.004	.785					
Constant						4.623	.129	35.791	<.001	4.369 4.878
Extent of telework						.428	.206	2.075	.039	.021 .834
Time in role						-.005	.021	-2.308	.818	-.046 .036
Interaction effect		(.003)	.671			.028	.034	.819	.414	-.039 .095

N = 218, Df1 = 3, Df2 = 214

Extent of telework ($\beta = -.157$, $t(214) = -.899$, $p = .370$) and Time in role ($\beta = .003$, $t(214) = .193$, $p = .847$) together explained 2.8% of the variation in Competence ($R^2 = .028$, $F(3, 214) = 2.027$, $p = .111$). As such, the two individual predictors were not significant and neither was the overall model. No significant interaction effect was observed ($R^2_{\text{change}} = .009$, $F(1, 214) = 2.052$, $p = .153$) (Appendix 10).

Table 19. Regression model 16, Competence.

Dependent: Competence	R	R ² (R ² _{change})	F	p	MSE	β	Std. error	t	p	95%CI LL, UL
Overall model	.166	.028	2.027	.111	.562					
Constant						5.831	.109	53.316	<.001	5.615 6.046
Extent of telework						-.157	.175	-.899	.370	-.501 .187
Time in role						.003	.018	0.193	.847	-.032 .038
Interaction effect		(.009)	2.052			.041	.029	1.433	.153	-.015 .098

N = 218, Df1 = 3, Df2 = 214

As such, there is no moderating effect of time in role on the relationship between teleworking extent and autonomy and competence satisfaction.

H6: The time one has spent in one's role positively moderates the relationship between teleworking extent and the satisfaction for autonomy and competence, such that an increasing time in role accentuates the effect telework has on these need satisfactions.

- NOT SUPPORTED

4.2.7 Income as a moderator

Extent of telework ($\beta = .255$, $t(214) = 1.104$, $p = .271$) and Income ($\beta = .000$, $t(214) = 1.324$, $p = .187$) together explained .8% of the variation in Competence ($R^2 = .008$, $F(3, 214) = .599$, $p = .616$). Neither the overall model or the individual predictors were significant. No interaction effect ($R^2_{\text{change}} = .007$, $F(1, 214) = 1.518$, $p = .219$) was observed (Appendix 10). Thus, the hypothesis was not supported.

Table 20. Regression model 17, Competence.

Dependent: Competence	R	R ² (R ² _{change})	F	p	MSE	β	Std. error	t	p	95%CI LL, UL
Overall model	.091	.008	.599	.616	.574					
Constant						5.695	.140	40.815	<.001	5.420 5.970
Extent of telework						.255	.231	1.104	.271	-.200 .709
Income						.000	.000	1.324	.187	.000 .000
Interaction effect		(.007)	1.518			-.000	.000	-1.232	.219	-.000 .000

N = 218, Df1 = 3, Df2 = 214

As such, there is no moderating effect of income on the relationship between teleworking extent and competence satisfaction.

H7: Income positively moderates the relationship between telework extent and competence satisfaction, such that increasing levels of income accentuate the positive relationship between telework extent and competence satisfaction.

- NOT SUPPORTED

5 Discussion and conclusion

After this declaration of results, it is concluded that there is a positive effect on autonomy satisfaction and a negative effect on relatedness satisfaction with increasing degrees of telework extent. The teleworking extent has no effect on competence satisfaction, but the model is improved by considering relative interruptions. Regarding individual differences, no further support could be found for a moderating effect of the variables tested. However, if the company provides employees with a choice of teleworking extent and has a teleworking policy that is seen as fair and just, this supports employee autonomy satisfaction. These results will be discussed below.

5.1 Autonomy

With the statistically significant ($p < .001$) simple regression result of the effect the extent of teleworking has on autonomy satisfaction, it was surprising that differences in autonomy satisfaction could not be statistically supported with post-hoc tests at the ($p = .05$) level when comparing groups based on telework extent. However, it is noteworthy that this measure is very close to being statistically significant ($p = .051$), in the group-wise test. Considering the large consensus around the benefits teleworking has on autonomy (Gajendran & Harrison, 2007; Gajendran et al., 2015; Kossek et al., 2006; Mackenzie, et al., 2017; Maruyama & Tietze, 2012), the relationship was expected to receive stronger support.

Furthermore, it was interesting to observe that telework extent lost explanatory power in a multiple regression model containing the variables Choice and Fairness. This indicates how important it is to take these additional variables into account in the teleworking research. Why both choice and fairness contribute significantly is intuitive as they both imply a higher degree of internalisation (Ryan & Deci, 2000b). Furthermore, only if one experiences choice, one can be the Origin (de Charms, 1968), due to having an internal rather than external control of one's behaviour. This indeed signals that the cultural and social context rather than the physical context is important for autonomy satisfaction.

Why the extent of telework did not explain the autonomy satisfaction better will be discussed and three potential avenues of explanations are considered. The first avenue has to do with sample size, as it is believed that with a larger sample, also small differences between groups could have been uncovered and more meaningfully interpreted. This especially as these groups' differences with ($p = .051$) currently reach significance at the ($p = .1$) level in a post-hoc test. The second avenue of explanations relates to the scale used and the factor structure of the W-BNS (Appendix 3) which became apparent in the validity assessment. As this relates to all the basic needs, these are commented upon in summation later. The third avenue of explanations has to do with the dynamics of these

individuals' autonomy support. It has been pointed out that some of the beneficial findings may only be representative for those employees who have had the option to choose the teleworking context for themselves (Kaduk et al., 2019). Meanwhile, in our data the Choice was ($M = 4.19$, $SD = 2.12$), implying that on average the respondents were fairly neutral in their experience of having a choice, but large variations exist. Thus, they may not experience the autonomy support needed to achieve the positive benefits of teleworking.

5.2 Competence

A positive relationship between telework extent and competence satisfaction could not be found in this study. An otherwise well-established benefit of telework has been the ability to avoid interruptions in the office environment (Allen et al., 2015; Gajendran & Harrison, 2007). Indeed, respondents perceived more interruptions in the office compared to the telework context, supporting this intuition. However, the inclusion of two forms of interdependence and taking account of interruptions in the work contexts did not improve the model to any major degree. Only for relative interruptions was there a moderating effect, which was weak. It should be acknowledged that interruptions in the general sense could encompass a wide range of disruptive events, some more or less related to specific work tasks. Certainly, some interruptions occur because there is interdependence between employees in regard to work tasks, in which case they are a necessary occurrence for their completion.

Interdependence was thought to moderate the telework extent and competence need satisfaction relationship, partly because interdependence implies a higher need for interaction with employees. As such, it was thought that because reliance on digital communication may imply lower interactivity than face-to-face meetings (Burgoon et al, 2002; Daft & Lengel, 1986) teleworking should be frustrating for highly interdependent jobs (Golden & Veiga, 2005; Golden & Gajendran; 2018). In this regard, the interactivity potential of current modern communication solutions may be sufficient for completing job tasks. Thus, in terms of competence satisfaction, interaction and communication may no longer be an obstacle to teleworking.

With the inclusion of interruptions and interdependence, an attempt was made to paint a view of the “nature of work”, thereby taking the work context into consideration, something previously called for by several authors (Allen et al., 2015; Boell et al., 2016). While these variables did not prove themselves important to the competence satisfaction in telework, these are also important findings to understand within the context of telework. We however acknowledge that these are not the only measurable characteristics which may provide a richer view of which type of job and accompanying tasks that are best suited for telework. Thus, the continued studying of characterising variables with

consideration to work characteristics remains important.

5.3 Relatedness

The relationship between increased teleworking and reduced relatedness was supported, as expected, both in the regression analysis and to measure differences in need satisfaction differences between the seven groups. This need reduction is likely due to less face-to-face interaction (Gajendran & Harrison 2007, Golden & Veiga 2008), and lack of spontaneous interaction. While the communication tools may be sufficient for work tasks and competence satisfaction, they may still not be sufficient for the deeper and empathetic communication needed to build and maintain strong relations. Grasping why so many would prefer a higher degree of teleworking when the reduction in relatedness is so clear, two avenues of explanations have arisen. The first avenue of explanation makes use of the relative reduction in relatedness in the seven work modalities. The results showed only a mild reduction in need satisfaction with low degrees of teleworking, indicating that the marginal benefit of another day in the office is reduced with the number of days spent in the office. Therefore, an increased degree of teleworking may not be limiting for relatedness at already low degrees of telework. In this sense, it does not seem important for employers to have all employees to spend every single day in the office, but rather that relatedness is facilitated on those selected days when there. This could be done by for example supporting a structure when colleagues can align their schedules of when to work at the office. The second avenue of explanations again relates to the scale used, which will be commented on below. Perhaps the relatedness of an individual working in a hybrid mode should consider the satisfaction in a wider sense, including both work and home satisfaction as individuals may try to maximise their need satisfaction in life overall. Indeed, Anderson et al. (2015) found that social affiliation outside of work was beneficial for teleworkers, acting as a buffer or compensation for disconnectedness at work.

5.4 Overall need satisfaction

While relatedness decreased at higher degrees of telework, it was not considered alarmingly low. As autonomy improved and competence remained stable, there are no indicators of need frustration in the data. Rather it indicates that one context may facilitate certain needs better than others. Therefore, it is intuitive that a hybrid mode is preferred before any of these extreme ends along the telework continuum. According to the organismic perspective, people act purposefully and strive to have their needs met to the highest degree (Ryan et al., 1997). Thus, if they choose a higher degree of telework, it is because it is beneficial for their need satisfaction, thus motivation to do so. Indeed, a hybrid work modality seems to manage the up- and downsides of each context, creating a middle road of the highest need satisfaction, and thus motivational ability. Allowing telework opportunities as a means of

providing flexibility then, seems like a fruitful endeavour.

5.5 Individual differences

When looking at the individual differences, the unsupported hypotheses led us to question what this may depend on. Of course, the hypotheses may have been incorrect. As age has been found to positively relate to competence and relatedness satisfaction (Schade et al., 2021) and being more autonomously motivated (Mackenzie et al., 2017), the relationship between age and need satisfaction was hypothesised. However, it may not be a one-way relationship between these, age may come with just as many downsides which would net the overall satisfaction change to zero. Similar arguments could hold true for gender, income level and the current time held within the role as well. However, a more likely explanation may be found in unrepresentative data. Looking at the gender variable, 81.1% of the included sample identified as women and 18.9% as men. In addition, 51.2% had spent up to two years in its role, indicating that a large share of the sample is new in their roles. Considering income, 79.3% made less than £2500 a month implying a lack of spread in income. Thus, the analysis would have benefited from more variation in the data. Thus, these results should not lead to a future disregard of these variables, rather more studies with large and varied samples representing the population are encouraged.

5.6 A note on scale development

It may also be questioned especially how autonomy and relatedness should be considered in the telework context. It is well represented in literature the notion that the boundary between work and home risks getting blurred with telework (Allen et al., 2015; Delanoeije et al., 2019) because of the co-location of the work- and home role (Gajendran & Harrison, 2007; Schieman & Young, 2010). The scale items used in the W-BNS only considers basic need satisfaction at work but not more holistically, for life in general.

Indeed, given boundary blurring, it may be challenging to have a scale initially intended for the office environment correctly measure the telework context. Because psychological need satisfaction is not restricted to the workplace but rather present throughout the lives of individuals, it is possible that non-work related factors disregarded by the research design conflate the respondent's answers, despite the telework items referring to this context specifically. Indeed, the factor analysis for both the office and telework context indicated that the need satisfaction subscales showed some interaction with each other. This was especially pronounced in the telework context. On this note, the poorer factor structure for the telework context emphasises the need for further scale development, such that need satisfaction may be properly measured and its data interpreted in a work environment in which the

home and work role has seen its boundaries blurred.

5.7 Theoretical contribution

This study has contributed to the theoretical field by trying to answer a) To what degree does the extent of teleworking affect the satisfaction of basic psychological needs? and b) How do individual differences moderate the relationship between teleworking extent and basic need satisfaction? The study has contributed with new knowledge of how the three needs are related to the work contexts of office work and telework as well as how this relates to the extent of telework. For autonomy and relatedness, we have been able to show a relationship between the degree of telework and need satisfaction, which could also be supported statistically ($p=.05$) in more detail between groups for the relatedness need. For the hypotheses regarding competence and individual differences we could not find statistical support at ($p=.05$) level. However, explanations of why the results came out as they did have been reasoned, in a way that may support future researchers in future theory development. The largest contribution of this paper has been to consider the effect of telework extent and the presence of choice together have on basic need satisfaction, two previously large theoretical gaps in the literature. The results also point to the need for further scale development to properly measure work related basic need satisfaction in this increasingly relevant work context in which the home and work role might have seen its boundaries blurred. While some questions remain, and new questions arise in the face of these results, a first step to close the knowledge gap has been provided.

5.8 Practical contribution

For managers and people in leading positions, benefitting from knowledge on how the people they lead are affected in their basic need satisfaction because of their teleworking extent, practical implications of this study are provided. Firstly, it has been shown how the needs are affected by the extent of telework. Overall, telework is positive for autonomy, neutral for competence and negative for relatedness. With different effects on the basic needs, it is perhaps not surprising that most people prefer a work modality including both office and telework. Furthermore, as one need cannot compensate for another, a hybrid mode appears as the ultimate middle road for need satisfaction, thus motivation. No support for the impact of individual differences on the relationships between teleworking extent and need satisfaction could be found. However, both choice and fairness were important factors for autonomy satisfaction. Therefore, managers and leaders are encouraged to have a policy that allows employees to use teleworking as a mode of working going forward, providing them with the choice. Important for the employers is to consider how they can best support need satisfaction in the different work contexts. Furthermore, clear communication with sound arguments for the chosen telework policy is encouraged.

5.9 Limitations and suggestions for future research

As has been highlighted in the discussion, this thesis is not without limitations. These limitations open avenues for future research. While our sample was deemed representative with regard to work contexts, with people working with varying degrees of telework, it was unable to represent the population as a whole with regard to the studied demographic variables. Thus, future researchers are encouraged to ensure a large and representative sample with regards to both teleworking extent and demographic variables in order to provide evidence of the effect teleworking has with regards to basic need satisfaction for different groups. They are also encouraged to widen the number of individual variables, to clearly understand which are the key in understanding between-person differences in outcomes on basic need satisfaction of telework extent. For this purpose, an explorative study is encouraged, to drive the key variables into the limelight. This remains an important avenue to study, to ensure a fair work environment with equal opportunity to thrive and excel for all people. Secondly, this master thesis has faced limitations regarding the time and resources. Thus, outside practical feasibility of this thesis was the longitudinal study, which has otherwise been encouraged in the telework context (Allen et al., 2015). Such a design can possibly better uncover effects related to people adapting to conducting work in each work context. Another aspect of time is to try to distinguish day-to-day effects from general effects (Vega et al., 2015). Indeed, employees who split their work hours between an office and some other place, may experience day-to-day effects based on where they currently conduct work, which can be meaningfully separated from more general effects of telework (Delanoije & Verbruggen, 2020). Therefore, research stretching across time is encouraged going forward, in order to uncover and differentiate daily fluctuations and general effects due to the context of work and work modality. Furthermore, the pandemic may have impacted workers, their satisfaction with work and life in general. These aspects may have impacted the results, being unable to filter out the world that we live in. In addition to longitudinal studies, macro studies are encouraged, comparing studies in basic need satisfaction at work across different time periods to see how and to what extent the current world climate may impact employees' need satisfaction, at work and in life in general.

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Appendix 1

Table 1. Overview of hypotheses.

1a.	There is a positive effect between telework extent and autonomy satisfaction, such that autonomy satisfaction increases for higher degrees of telework.	SUPPORTED
1b.	Choice positively moderates the relationship between the extent of telework and the autonomy satisfaction, such that higher levels of choice accentuate the positive relationship between the teleworking extent and autonomy satisfaction.	NOT SUPPORTED
2a.	There is a positive effect between telework extent and competence satisfaction, such that competence satisfaction increases for higher degrees of telework.	NOT SUPPORTED
2b.	Interruptions moderate the relationship between telework extent and competence satisfaction, such that those with relatively more interruptions at the office experience higher competence satisfaction with a higher extent of teleworking.	SUPPORTED
2c.	The degree of interdependence negatively moderates the relationship between telework extent and competence satisfaction, such that higher degrees of interruptions dampen the effect of teleworking on competence satisfaction.	NOT SUPPORTED
3.	There is a negative effect between telework extent and relatedness satisfaction, such that relatedness satisfaction decreases for higher degrees of telework.	SUPPORTED
4.	Age positively moderates the relationship between the teleworking extent and basic need satisfaction, such that increasing age accentuates the relationship between teleworking extent and the need satisfaction for autonomy and competence, while it dampens the relationship for relatedness.	NOT SUPPORTED
5.	Gender moderates the relationship between teleworking extent and autonomy and competence need satisfaction, such that the relationship is stronger for women than men.	NOT SUPPORTED

6.	The time one has spent in one's role positively moderates the relationship between teleworking extent and the satisfaction for autonomy and competence, such that an increasing Time in role accentuates the effect telework has on these need satisfactions.	NOT SUPPORTED
7.	Income positively moderates the relationship between telework extent and competence satisfaction, such that increasing levels of income accentuate the positive relationship between telework extent and competence satisfaction.	NOT SUPPORTED

Appendix 2

Master Thesis MBM

Start of Block: Block 1

Thank you for taking part in this survey!

We are two master's students at the Stockholm School of Economics, writing a thesis with the purpose of understanding the effects the new ways of working have on employees. Therefore, the majority of the questions will circle around how you perceive your work context, when working from home and from the office. While the findings may not benefit you directly, they will contribute in a more general sense, through a widened knowledge base and perhaps future company policies.

The questions will take approximately 7 minutes to answer.

Your response will be anonymous, only analysed and reported at an aggregate level. Your response is voluntary and if you for any reason would no longer like to participate, you may exit the survey. However, your answers are highly valued!

For any further questions, please reach out to Inga Eriksson or Jakob Sevelin at:

24151@student.hhs.se
24030@student.hhs.se

End of Block: Block 1

Start of Block: Background information



What is your age? Write in numbers.

Gender

- ☐ Male
 - ☐ Female
 - ☐ Other
 - ☐ Prefer not to say
-

Living arrangement

- ☐ Single household
 - ☐ Single household with children
 - ☐ Living with partner
 - ☐ Living with partner and children
 - ☐ Living with parents
 - ☐ Living with roommate/s
-

Primary work status

- ☐ Full-time working
- ☐ Part-time working
- ☐ Parental leave
- ☐ Not working

Skip To: End of Survey If Primary work status = Not working

Choose your primary current occupation. If you are unsure choose the one that is closest to what you do.

- ☐ Business owner
- ☐ Paid employee
- ☐ Volunteer
- ☐ Freelancing/consulting
- ☐ Intern
- ☐ Other, please specify if possible _____

Page Break

If working at the office, what is your total travel time in minutes (there and back) on average? Indicate time in minutes.



How do you normally travel to and from work?

- ☐ Car
 - ☐ Public transport
 - ☐ Bike
 - ☐ Walk
 - ☐ Other
-

Please indicate to which extent you agree with the following statement:

It is expensive for me to travel to and from work

- ☐ Strongly disagree
 - ☐ Disagree
 - ☐ Somewhat disagree
 - ☐ Neither agree nor disagree
 - ☐ Somewhat agree
 - ☐ Agree
 - ☐ Strongly agree
-

In which industry do you work? If you are unsure, choose the one that is closest to you.

- ☐ Accounting
- ☐ Information technology
- ☐ Financial services and banking
- ☐ Education
- ☐ Leisure and hospitality
- ☐ Healthcare
- ☐ Law
- ☐ Marketing
- ☐ Consumer goods
- ☐ Energy and infrastructure
- ☐ Public and governmental
- ☐ Business support and management services
- ☐ Engineering and construction
- ☐ Other, specify if possible _____



How long, in years, have you been employed at your current workplace? If you have been employed for more than one year, please indicate the amount of years using numbers.

- ☐ Up to 1 year
- ☐ Over 1 year _____



How long have you been in your current role at your work? If you have been in your current role for more than one year, please indicate the amount of years using numbers.

☐ Up to 1 year

☐ Over 1 year _____

What is your current role at your work?

What is the gender of your closest superior?

☐ Male

☐ Female

☐ Other

☐ Prefer not to say



In which country do you currently reside?

▼ Afghanistan ... Zimbabwe

What is your pre-tax average income per month? Please choose your currency.

☐ GBP _____

☐ USD _____

☐ SEK _____

End of Block: Background information

Start of Block: Block 2

We will now ask you questions regarding your work in two contexts, the office and a place outside of office. Please consider both your company's office and potential client's office as "office", and all other settings where you conduct work, whether that being at home, in a café or the park, as outside the office.

Please indicate to which degree you agree with the following statements. We are aware that some statements sound similar but this is intentional and to ensure higher accuracy.



How many hours do you work on average per week?

From an office : _____

From home or other place outside office : _____

Total : _____

I am allowed to choose where to conduct most of my work, whether that is in the office, at home or at another place.

- ☐ Strongly disagree
 - ☐ Disagree
 - ☐ Somewhat disagree
 - ☐ Neither agree nor disagree
 - ☐ Somewhat agree
 - ☐ Agree
 - ☐ Strongly agree
-

I feel like I have a choice of where to conduct my work, whether that is in the office, at home or at another place.

- ☐ Strongly disagree
 - ☐ Disagree
 - ☐ Somewhat disagree
 - ☐ Neither agree nor disagree
 - ☐ Somewhat agree
 - ☐ Agree
 - ☐ Strongly agree
-

Regarding choice of where to conduct your work. Do you have anything to comment?

My organisation's policy towards remote working is fair.

- ☐ Strongly disagree
 - ☐ Disagree
 - ☐ Somewhat disagree
 - ☐ Neither agree nor disagree
 - ☐ Somewhat agree
 - ☐ Agree
 - ☐ Strongly agree
-

My organisation's policy towards remote working is justifiable.

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Somewhat disagree
- ☐ Neither agree nor disagree
- ☐ Somewhat agree
- ☐ Agree
- ☐ Strongly agree



If you had a choice, how would you like to distribute your weekly work hours?

From an office : _____

From home or other place outside office : _____

Total : _____

My organisation has communicated that it allows me to choose where to conduct most of my work.
For example in or outside the office.

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Somewhat disagree
- ☐ Neither agree nor disagree
- ☐ Somewhat agree
- ☐ Agree
- ☐ Strongly agree

End of Block: Block 2

Start of Block: Block 3

Please indicate to which degree you agree with the following statements. We are aware that some statements sound similar but this is intentional and to ensure higher accuracy.

My job activities are greatly affected by the work of other people.

- ☐ Strongly disagree
 - ☐ Disagree
 - ☐ Somewhat disagree
 - ☐ Neither agree nor disagree
 - ☐ Somewhat agree
 - ☐ Agree
 - ☐ Strongly agree
-

My job depends on the work of many different people for its completion.

- ☐ Strongly disagree
 - ☐ Disagree
 - ☐ Somewhat disagree
 - ☐ Neither agree nor disagree
 - ☐ Somewhat agree
 - ☐ Agree
 - ☐ Strongly agree
-

My job cannot be done unless others do their work.

- ☐ Strongly disagree
 - ☐ Disagree
 - ☐ Somewhat disagree
 - ☐ Neither agree nor disagree
 - ☐ Somewhat agree
 - ☐ Agree
 - ☐ Strongly agree
-

My job requires me to accomplish my job before others complete their job.

- ☐ Strongly disagree
 - ☐ Disagree
 - ☐ Somewhat disagree
 - ☐ Neither agree nor disagree
 - ☐ Somewhat agree
 - ☐ Agree
 - ☐ Strongly agree
-

Other jobs depend directly on my job.

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Somewhat disagree
- ☐ Neither agree nor disagree
- ☐ Somewhat agree
- ☐ Agree
- ☐ Strongly agree

Unless my job gets done, other jobs cannot be completed.

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Somewhat disagree
- ☐ Neither agree nor disagree
- ☐ Somewhat agree
- ☐ Agree
- ☐ Strongly agree

End of Block: Block 3

Start of Block: Block 4

Please indicate to which degree you agree with the following statements.

I encounter many interruptions during work at the office.

- ☐ Strongly disagree
 - ☐ Disagree
 - ☐ Somewhat disagree
 - ☐ Neither agree nor disagree
 - ☐ Somewhat agree
 - ☐ Agree
 - ☐ Strongly agree
-

I encounter many interruptions during work at home or other place outside office.

- ☐ Strongly disagree
 - ☐ Disagree
 - ☐ Somewhat disagree
 - ☐ Neither agree nor disagree
 - ☐ Somewhat agree
 - ☐ Agree
 - ☐ Strongly agree
-

I spend a higher share of my working time in the office than my colleagues do.

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Somewhat disagree
- ☐ Neither agree nor disagree
- ☐ Somewhat agree
- ☐ Agree
- ☐ Strongly agree

End of Block: Block 4

Start of Block: Block 7

We will now, again, ask you questions regarding your work in two contexts, the office and a place outside of office. Please consider both your company's office and potential client's office as "office", and all other settings where you conduct work, whether that being at home, in a café or the park, as home or place outside the office.

We are aware that some statements sound similar, this is intentional to ensure high accuracy.

End of Block: Block 7

Start of Block: Block 9

Please indicate to which degree you agree with the following statements.

I feel like I can be myself at my job.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
When working from the office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When working from home or place outside office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I often feel like I have to follow other people's commands.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
When working from the office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When working from home or place outside office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If I could choose, I would do things differently.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
When working from the office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When working from home or place outside office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The tasks I have to do are in line with what I really want to do.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
When working from the office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When working from home or place outside office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I feel free to do my job the way I think it could best be done.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
When working from the office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When working from home or place outside office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In my job, I feel forced to do things I do not want to do.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
When working from the office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When working from home or place outside office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I really master my tasks at my job.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
When working from the office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When working from home or place outside office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I feel competent at my job.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
When working from the office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When working from home or place outside office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please choose number five from the below alternatives.

- ☐ 1
- ☐ 4
- ☐ 5
- ☐ 16
- ☐ 14
- ☐ 23
- ☐ 3

I am good at the things I do in my job.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
When working from the office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When working from home or place outside office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I have the feeling that I can even accomplish the most difficult tasks.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
When working from the office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When working from home or place outside office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I don't really feel connected with other people at my job.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
When working from the office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When working from home or place outside office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I feel part of a group.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
When working from the office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When working from home or place outside office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I don't really mix with other people at my job.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
When working from the office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When working from home or place outside office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I can talk with people about things that really matter to me.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
When working from the office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When working from home or place outside office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I often feel alone when I am interacting with my colleagues.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
When working from the office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When working from home or place outside office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Some people I work and collaborate with are close friends of mine.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
When working from the office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When working from home or place outside office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Block 9

Start of Block: Block 8

You have reached the last question of the survey. Do you have anything regarding previous questions or answers to comment on?

End of Block: Block 8

Appendix 3

3.1 KMO & Bartlett's test

Table 2. KMO and Bartlett's Test - Office.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.822
Bartlett's Test of Sphericity	Approx. Chi-Square	3360.814
	df	351
	Sig.	p<.001

Table 3. KMO and Bartlett's Test - Telework.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.801
Bartlett's Test of Sphericity	Approx. Chi-Square	3364.474
	df	351
	Sig.	p<.001

3.2 Factor correlation matrix

Table 4. Factor correlation matrix - Office. .

Factor	1	2	3	4	5	6	7
1	1,000	.029	-.149	-.405	.330	.140	-.172
2	.029	1.000	-.016	.089	-.201	.057	.556
3	-.149	-.016	1,000	-.014	-.119	.377	-.049
4	-.405	.089	-.014	1,000	-.296	-.197	.061
5	.330	-.201	-.119	-.296	1,000	-.003	-.224
6	.140	.057	.377	-.197	-.003	1,000	-.046
7	-.172	.556	-.049	.061	-.224	-.046	1.000

Extraction Method: Principal Axis Factoring.

Table 5. Factor correlation matrix - Telework.

Factor	1	2	3	4	5	6	7	8
1	1.000	-.047	-.394	.185	.106	-.241	.268	.050
2	-.047	1,000	.042	-.075	-.176	.023	.138	-.480
3	-.394	.042	1,000	-.047	-.034	.517	-.159	-.015
4	.185	-.075	-.047	1,000	.162	-.164	.249	.144
5	.106	-.176	-.034	.162	1,000	-.142	-.008	.045
6	-.241	.023	.517	-.164	-.142	1,000	-.039	-.019
7	.268	.138	-.159	.249	-.008	-.039	1,000	-.016
8	.050	-.480	-.015	.144	.045	-.019	-.016	1,000

Extraction Method: Principal Axis Factoring.

3.3 Anti-image correlation matrix

Table 6a. Anti-image correlation matrix - Office.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Choice 1.	.729 ^a													
Choice 2.		.724 ^a												
Choice 3.			.915 ^a											
Received inter. 1.				.834 ^a										
Received inter. 2.					.774 ^a									
Received inter. 3.						.803 ^a								
Initiated inter. 1.							.795 ^a							
Initiated inter. 2.								.792 ^a						
Initiated inter. 3.									.779 ^a					
Fair 1.										.735 ^a				
Fair 2.											.708 ^a			
Autonomy 1.												.893 ^a		
Autonomy 2.													.660 ^a	
Autonomy 3.														.843 ^a

Note: a. Measures of Sampling Adequacy (MSA)

Table 6b. Anti-image correlation matrix, cont. - Office.

	15	16	17	18	19	20	21	22	23	24	25	26	27
Autonomy 4.	.832 ^a												
Autonomy 5.		.895 ^a											
Autonomy 6.			.841 ^a										
Competence 1.				.858 ^a									
Competence 2.					.872 ^a								
Competence 3.						.811 ^a							
Competence 4.							.890 ^a						
Relatedness 1.								.857 ^a					
Relatedness 2.									.836 ^a				
Relatedness 3.										.869 ^a			
Relatedness 4.											.894 ^a		
Relatedness 5.												.863 ^a	
Relatedness 6.													.902 ^a

Note: a. Measures of Sampling Adequacy (MSA)

Table 7a. Anti-image correlation matrix - Telework.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Choice 1.	.780 ^a													
Choice 2.		.765 ^a												
Choice 3.			.874 ^a											
Received inter. 1.				.835 ^a										
Received inter. 2.					.800 ^a									
Received inter. 3.						.847 ^a								
Initiated inter. 1.							.770 ^a							
Initiated inter. 2.								.787 ^a						
Initiated inter. 3.									.741 ^a					
Fair 1.										.752 ^a				
Fair 2.											.690 ^a			
Autonomy 1.												.894 ^a		
Autonomy 2.													.480 ^a	
Autonomy 3.														.829 ^a

Note: a. Measures of Sampling Adequacy (MSA)

Table 7b. Anti-image correlation matrix, cont. - Telework.

	15	16	17	18	19	20	21	22	23	24	25	26	27
Autonomy 4.	.796 ^a												
Autonomy 5.		.872 ^a											
Autonomy 6.			.733 ^a										
Competence 1.				.892 ^a									
Competence 2.					.869 ^a								
Competence 3.						.867 ^a							
Competence 4.							.913 ^a						
Relatedness 1.								.671 ^a					
Relatedness 2.									.787 ^a				
Relatedness 3.										.674 ^a			
Relatedness 4.											.754 ^a		
Relatedness 5.												.750 ^a	
Relatedness 6.													.630 ^a

Note: a. Measures of Sampling Adequacy (MSA)

3.4 Pattern matrix

Table 8. Pattern matrix - Office.

Factor	1	2	3	4	5	6	7
Choice 1.		-.960					
Choice 2.		-.952					
Choice 3.		-.756					
Received inter. 1.						.749	
Received inter. 2.						.774	
Received inter. 3.						.701	
Initiated inter. 1.			.742				
Initiated inter. 2.			.692				
Initiated inter. 3.			.799				
Fair 1.							-.823
Fair 2.							-.928
Autonomy 1.				-.418	.314		
Autonomy 2.					.559		
Autonomy 3.					.588		
Autonomy 4.							
Autonomy 5.				-.485			
Autonomy 6.					.505		
Competence 1.				-.780			
Competence 2.				-.785			
Competence 3.				-.855			
Competence 4.				-.710			
Relatedness 1.	.693						
Relatedness 2.	.656						
Relatedness 3.	.694						
Relatedness 4.	.398						
Relatedness 5.	.660						
Relatedness 6.	.351						

Note: Extraction Method: Principal Axis Factoring. Rotation Method: Oblimin with Kaiser Normalisation.

a. Rotation converged in 13 iterations.

Table 9. Pattern matrix - Telework.

Factor	1	2	3	4	5	6	7	8
Choice 1.			-.951					
Choice 2.			-.939					
Choice 3.			-.759					
Received inter. 1.		.769						
Received inter. 2.		.832						
Received inter. 3.		.762						
Initiated inter. 1.								-.749
Initiated inter. 2.								-.668
Initiated inter. 3.								-.832
Fair 1.						-.837		
Fair 2.						-.919		
Autonomy 1.	.522							
Autonomy 2.					.403			
Autonomy 3.					.428			
Autonomy 4.	.326							
Autonomy 5.	.521							
Autonomy 6.					.572			
Competence 1.	.818							
Competence 2.	.858							
Competence 3.	.820							
Competence 4.	.741							
Relatedness 1.				.767				
Relatedness 2.				.477				
Relatedness 3.				.539				
Relatedness 4.							.589	
Relatedness 5.				.709				
Relatedness 6.							.718	

Note: Extraction Method: Principal Axis Factoring. Rotation Method: Oblimin with Kaiser Normalisation.

a. Rotation converged in 13 iterations.

3.5 Total variance explained

Table 10. Total variance explained - Office.

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	5.967	22.101	22.101	5.520	20.445	20.445	3.808
2	3.913	14.491	36.592	3.663	13.565	34.010	3.407
3	3.602	13.339	49.932	3.334	12.348	46.358	2.692
4	1.936	7.171	57.102	1.531	5.672	52.029	4.277
5	1.333	4.936	62.039	.820	3.036	55.066	2.513
6	1.157	4.286	66.324	.738	2.733	57.798	2.918
7	.902	3.341	69.666	.638	2.361	60.159	2.889
8	.828	3.065	72.731				
9	.815	3.018	75.748				
10	.713	2.641	78.390				
11	.625	2.314	80.704				
12	.571	2.116	82.820				
13	.545	2.017	84.837				
14	.495	1.833	86.669				
15	.457	1.694	88.363				
16	.432	1.600	89.963				
17	.390	1.445	91.409				
18	.367	1.358	92.767				
19	.313	1.158	93.925				
20	.294	1.090	95.015				
21	.270	1.001	96.016				
22	.246	.909	96.925				
23	.241	.892	97.817				
24	.227	.842	98.658				
25	.195	.723	99.381				
26	.132	.488	99.869				
27	.035	.131	100.000				

Note: Extraction Method: Principal Axis Factoring.

Table 11. Total variance explained - Telework. .

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	6,260	23.185	23.185	5.944	22.016	22.016	4.655
2	3.824	14.162	37.346	3.507	12.988	35.003	2.914
3	2.608	9.660	47.006	2.316	8.577	43.581	4.146
4	2.077	7.693	54.699	1.676	6.207	49.788	2.340
5	1.573	5.826	60.525	1.075	3.983	53.771	1.212
6	1.188	4.400	64.925	.827	3.064	56.835	3.068
7	1.121	4.152	69.077	.669	2.479	59.313	1.894
8	.903	3.345	72.422	.597	2.212	61.525	2.721
9	.830	3.074	75.495				
10	.752	2.786	78.282				
11	.694	2.570	8.852				
12	.591	2.187	83.039				
13	.557	2.064	85.103				
14	.545	2.019	87.121				
15	.478	1.772	88.893				
16	.417	1.546	9.439				
17	.382	1.413	91.852				
18	.350	1.295	93.147				
19	.323	1.196	94.343				
20	.282	1.046	95.389				
21	.264	.977	96.366				
22	.252	.933	97.299				
23	.203	.752	98.051				
24	.198	.735	98.785				
25	.173	.641	99.426				
26	.121	.447	99.873				
27	.034	.127	100.000				

Note: Extraction Method: Principal Axis Factoring

Appendix 4

4.1 Internal consistency overview

Table 12. Internal consistency overview

Measurement Model	Construct	Number of items	Context	Cronbach's alpha
W-BNS	Autonomy	6	Telework	.583
			Office	.745
	Competence	4	Telework	.893
			Office	.845
	Relatedness	6	Telework	.736
			Office	.802
WDQ	Initiated Interdependence	3	Overall	.842
	Received Interdependence	3	Overall	.874
-	Choice	3	Overall	.944

4.2 Overview of weighted need constructs

Table 13. Overview of weighted need constructs.

Satisfaction construct (weighted)	M	SD
Autonomy	4.89	.91
Competence	5.85	.76
Relatedness	4.66	1.10

4.3 Overview of correlations

Table 14. Overview of item correlations (Pearson's).

	1	2	3	4	5	6	7	8	9	10
Telework extent (1)	--									
Autonomy (2)	.238**	--								
Competence (3)	.012	.453**	--							
Relatedness (4)	-.299**	.389**	.326**	--						
Choice (5)	.585**	.357**	.142*	-.103	--					
Received inter. (6)	-.019	-.113	-.001	.030	-.121	--				
Initiated inter. (7)	.036	-.077	0,001	-.114	.055	.543**	--			
Fair (8)	.401**	.370**	.187**	.097	.591**	-.005	.044	--		
Relative inter.(9)	.084	-.077	.061	-.130	.034	.097	.045	.041	--	
Telework extent (choice) (10)	.678**	.094	.031	.268**	.401**	-.054	-.008	.067	.085	--

N= 218.

** . Correlation is significant at the 0.01 level (2-tailed). * . Correlation is significant at the 0.05 level (2-tailed).

4.4 Autonomy

Autonomy in the office context (M= 4.59, SD = 1.02)

Table 15. Autonomy items and descriptives - office.

Item #	Statement - When working from the office	M	SD
1.	I feel like I can be myself at my job	5.17	1.48
2.	I often feel like I have to follow other people's commands	3.56	1.58
3.	If I could choose, I would do things differently	4.07	1.68
4.	The tasks I have to do are in line with what I really want to do	4.92	1.36
5.	I feel free to do my job the way I think it could best be done	5.22	1.38
6.	In my job, I feel forced to do things I do not want to do	4.63	1.73

Cronbach's α = .745.

N= 218.

Autonomy in the telework context (M= 5.01, SD = .79)

Table 16. Autonomy items and descriptives - telework.

Item #	Statement - When working from home or other place	M	SD
1.	I feel like I can be myself at my job	5.78	1.17
2.	I often feel like I have to follow other people's commands	4.20	1.53
3.	If I could choose, I would do things differently	4.46	1.55
4.	The tasks I have to do are in line with what I really want to do	4.96	1.40
5.	I feel free to do my job the way I think it could best be done	5.58	1.25
6.	In my job, I feel forced to do things I do not want to do	5.06	1.40

Cronbach's α = .583.

N= 218.

4.5 Competence

Competence in the office context (M= 5.66, SD = .94)

Table 17. Competence items and descriptives - office.

Item #	Statement - When working from the office	M	SD
1.	I really master my tasks at my job	5.60	1.14
2.	I feel competent at my job	5.85	1.02
3.	I am good at the things I do in my job	5.85	.99
4.	I have the feeling that I can even accomplish the most difficult tasks	5.34	1.34

Cronbach's α = .845.

N= 218.

Competence in the telework context (M= 5.58, SD = 1.03)

Table 18. Competence items and descriptives - telework.

Item #	Statement - When working from home or other place	M	SD
1.	I really master my tasks at my job	5.54	1.19
2.	I feel competent at my job	5.75	1.09
3.	I am good at the things I do in my job	5.77	1.12
4.	I have the feeling that I can even accomplish the most difficult tasks	5.28	1.31

Cronbach's α = .893.

N= 218.

4.6 Relatedness

Relatedness at the office (M= 4.89, SD = 1.12)

Table 19. Relatedness items and descriptives - office.

Item #	Statement - When working from the office	M	SD
1.	I don't really feel connected with other people at my job	4.83	1.67
2.	I feel part of a group	5.34	1.35
3.	I don't really mix with other people at my job	4.93	1.67
4.	I can talk with people about things that really matter to me	5.03	1.419
5.	I often feel alone when I am interacting with my colleagues	5.01	1.61
6.	Some people I work and collaborate with are close friends of mine	4.19	1.73

Cronbach's α = .802.

N= 218.

Relatedness in the telework context (M= 4.24, SD = 1.07)

Table 20. Relatedness items and descriptives - telework. .

Item #	Statement - When working from home or other place	M	SD
1.	I don't really feel connected with other people at my job	4.22	1.68
2.	I feel part of a group	4.46	1.48
3.	I don't really mix with other people at my job	3.78	1.81
4.	I can talk with people about things that really matter to me	4.67	1.54
5.	I often feel alone when I am interacting with my colleagues	4.43	1.58
6.	Some people I work and collaborate with are close friends of mine	3.89	1.70

Cronbach's α = .736.

N= 218.

4.7 Interdependence

Initiated interdependence (M= 4.53, SD = 1.48)

Table 21. Initiated interdependence items and descriptives. .

Item #	Statement	M	SD
1	My job requires me to accomplish my job before others complete their job	4.17	1.77
2	Other jobs depend directly on my job	4.75	1.66
3	Unless my job gets done, other jobs cannot be completed	4.67	1.67

Cronbach's α = .842.

N= 218.

Received interdependence (M= 4.76, SD = 1.42)

Table 22. Received interdependence items and descriptives.

Item #	Statement	M	SD
1.	My job activities are greatly affected by the work of other people.	4.80	1.50
2.	My job depends on the work of many different people for its completion	4.79	1.63
3.	My job cannot be done unless others do their work	4.68	1.64

Cronbach's α = .874.

N= 218.

4.8 Choice

Choice (M= 4.19, SD = 2.12)

Table 23. Choice items and descriptives.

Item #	Statement	M	SD
1.	I am allowed to choose where to conduct most of my work, whether that is in the office, at home or at another place	4.09	2.27
2.	I feel like I have a choice of where to conduct my work, whether that is in the office, at home or at another place	4.09	2.25
3.	My organisation has communicated that it allows me to choose where to conduct most of my work. For example in or outside the office	4.39	2.20

Cronbach's α = .944.

N= 218.

4.9 Fairness

Fairness (M= 5.36, SD = 1.54)

Table 24. Fairness items and descriptives.

Item #	Statement	M	SD
1.	My organisation's policy towards remote working is fair.	5.25	1.68
2.	My organisation's policy towards remote working is justifiable.	5.46	1.54

N= 218.

4.10 Relative interruptions

Relative interruptions (M= 1.29, SD = 2.15)

Table 25. Interruptions items and descriptives.

Item #	Statement	M	SD
3.	I encounter many interruptions during work at the office.	4.75	1.65
4.	I encounter many interruptions during work at home or other place outside office.	3.46	1.67

Note: Relative interruptions=interruptions(office) - interruptions(telework)

N= 218.

Appendix 5

5.1 Age

Table 26. Age frequency table.

Age (years)	N (218)	%	cum %
Up to 20	2	.9	.9
21-30	68	31.2	32.1
31-40	84	38.5	70.6
41-50	42	19.3	89.9
51-60	18	8.3	98.2
Over 60	4	1.8	100.0

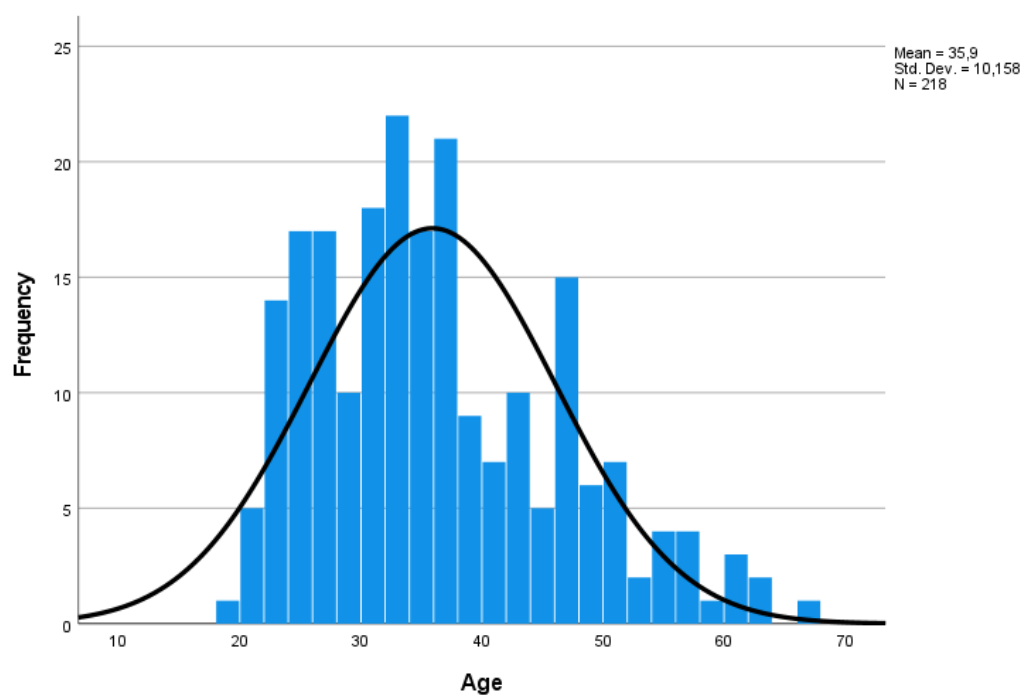


Figure 1. Age histogram.

5.2 Income

Table 27. Income frequency table.

Income Groups (£)	N (218)	%	cum %
0-499	7	3.2%	3.2%
500-999	17	7.8%	11.0%
1000-1499	48	22.0%	33.0%
1500-1999	56	25.7%	58.7%
2000-2499	45	20.6%	79.3%
2500-2999	23	10.6%	89.9%
3000+	22	10.1%	100.0%

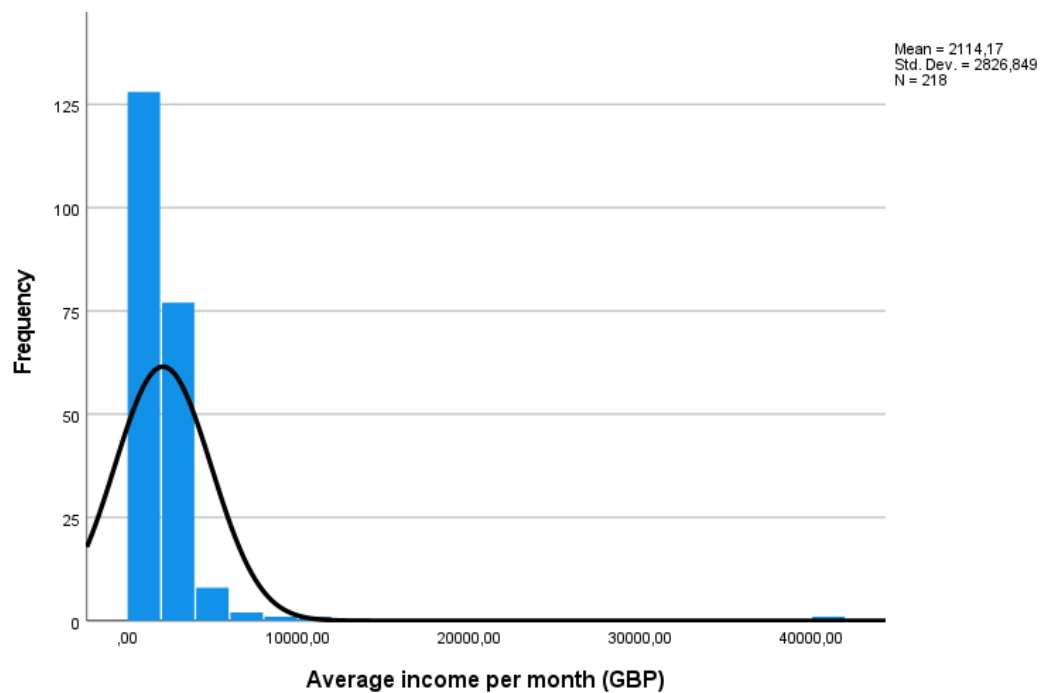


Figure 2. Income histogram.

5.3 Time in role

Table 28. Time in role frequency table.

Time in role (years)	N (218)	%	cum %
≤ 1	73	33.5	33.5
$1 < x \leq 2$	40	18.3	51.8
$2 < x \leq 3$	27	12.4	64.2
$3 < x \leq 4$	16	7.3	71.6
$4 < x \leq 5$	11	5.0	76.6
$5 < x$	51	23.4	100.0

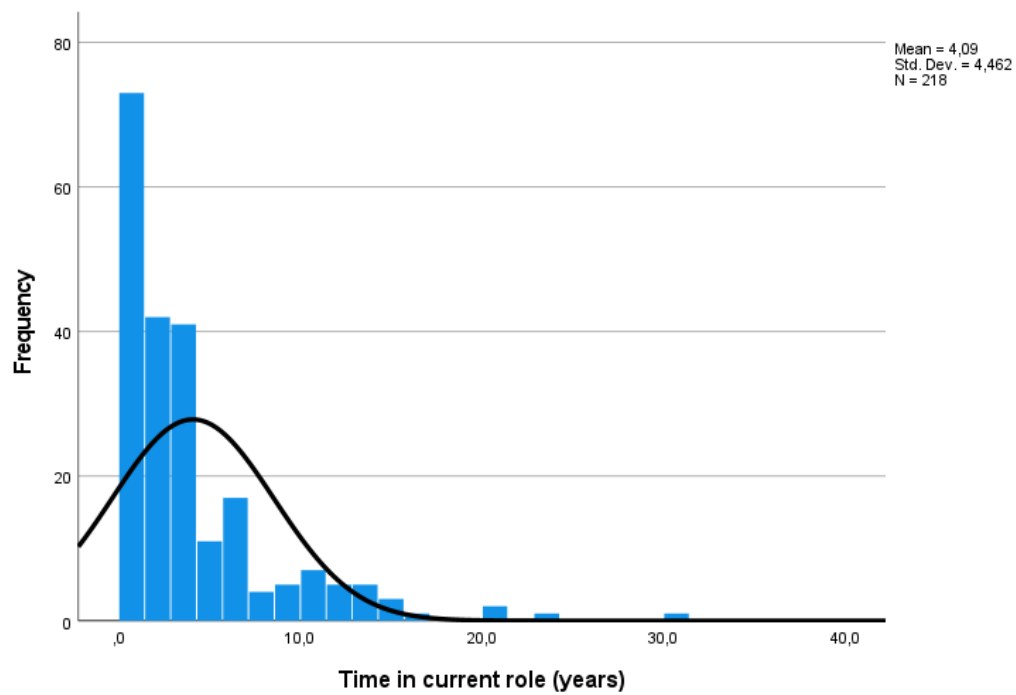


Figure 3. Time in role histogram.

Appendix 6

6.1 Autonomy

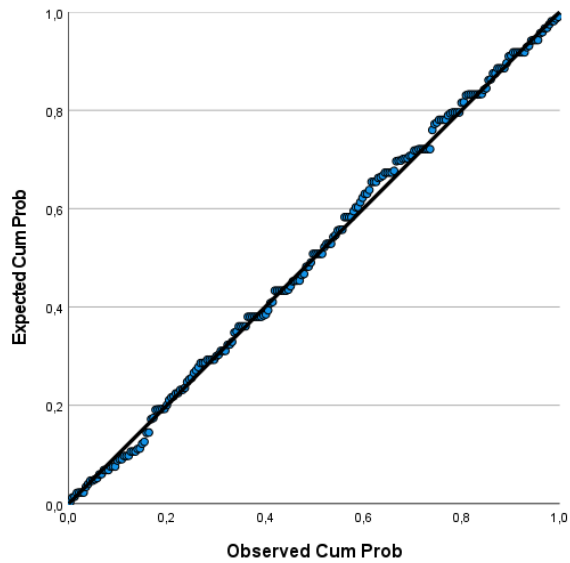


Figure 4-6.

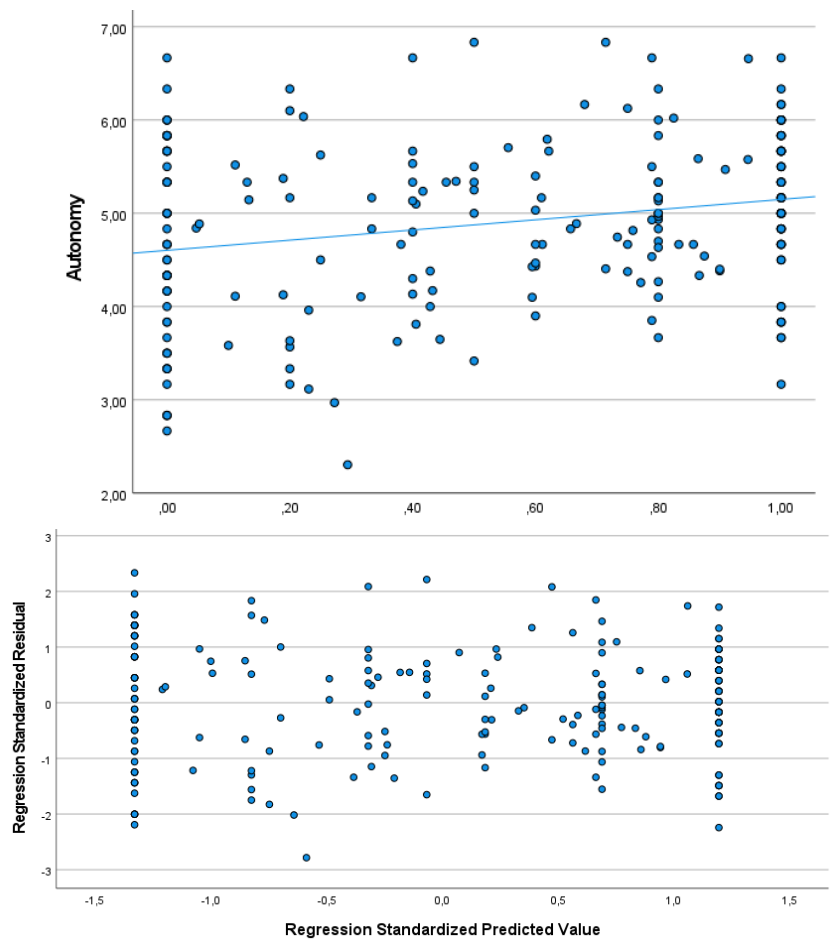
4. Normal P-P Plot of Regression

Standardised Residual.

5. Scatter plot with line of fit.

6. Scatter plot standardised residual-
standardised predicted value.

Dependent variable: Autonomy



6.2 Competence

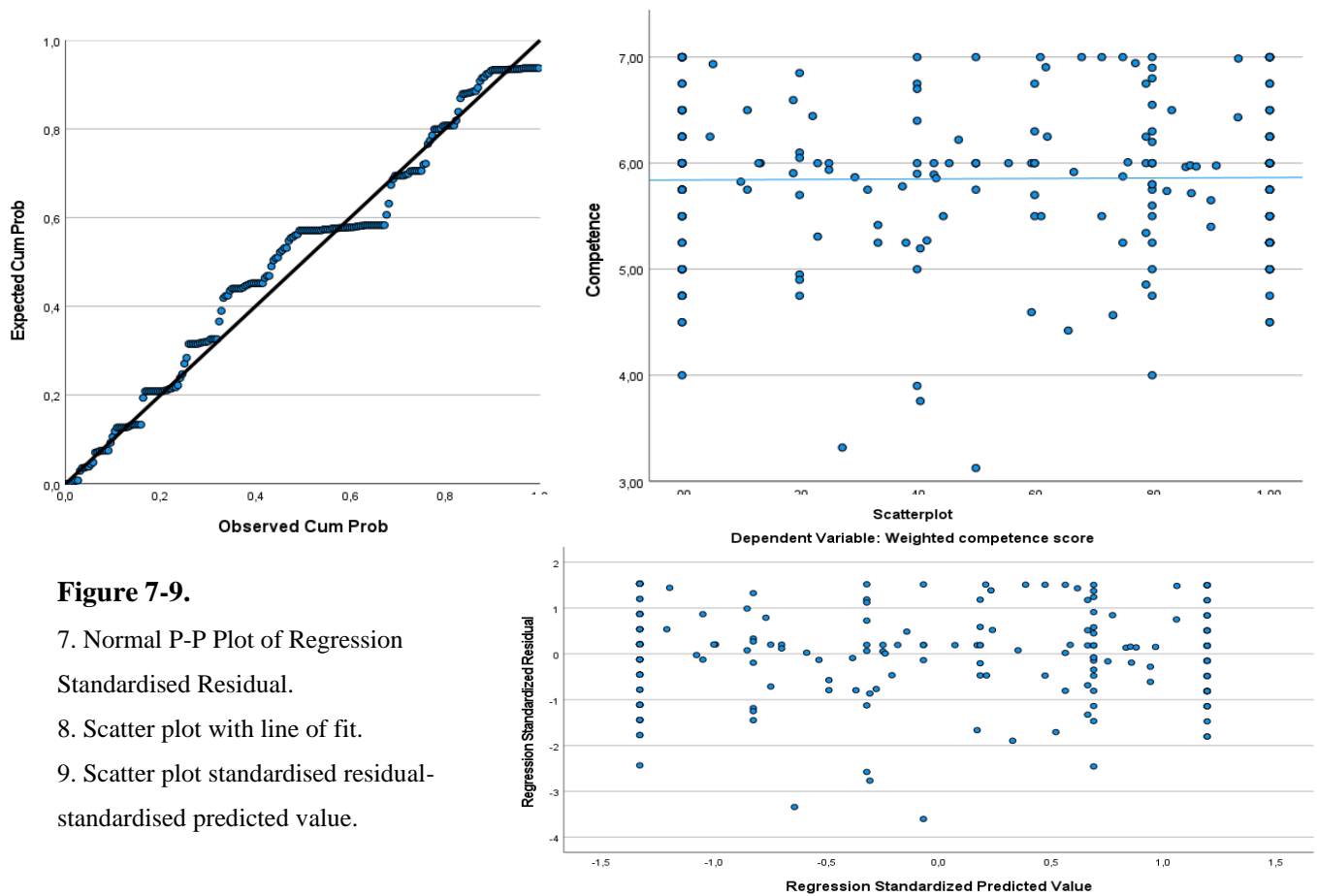


Figure 7-9.

7. Normal P-P Plot of Regression

Standardised Residual.

8. Scatter plot with line of fit.

9. Scatter plot standardised residual-
standardised predicted value.

Dependent variable: Competence

6.3 Relatedness

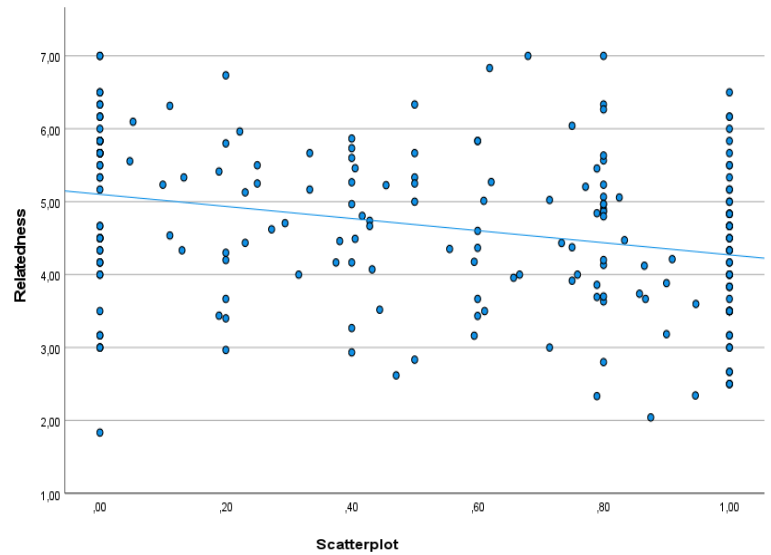
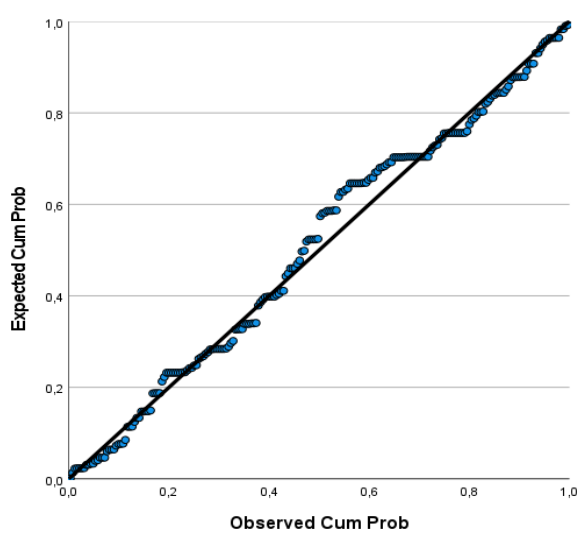


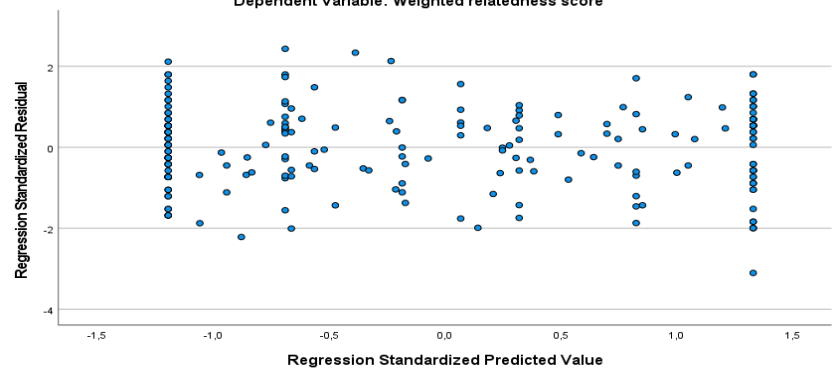
Figure 10-12.

10. Normal P-P Plot of Regression Standardised Residual.

11. Scatter plot with line of fit.

12. Scatter plot standardised residual-standardised predicted value.

Dependent variable: Relatedness



Appendix 7

Table 29. Paired samples t-test interruptions.

	Paired differences mean	Std. Deviation	Std. Error Mean	t	Two-Sided p	95%CI LL, UL
Interruptions (office-telework)	1.289	2.143	.145	8.880	<.001	1.003, 1.575

N= 218.

Table 30. Frequency table relative interruptions.

Relative interruptions*	N (218)	%	cum %
-4	2	.9	.9
-3	5	2.3	3.2
-2	12	5.5	8.7
-1	12	5.5	14.2
0	65	29.8	44.0
1	32	14.7	58.7
2	26	11.9	7.6
3	25	11.5	82.1
4	20	9.2	91.3
5	13	6	97.2
6	6	2.8	100.0

*interruptions office - interruptions telework

Appendix 8

Table 31. Bonferroni groupwise comparisons for Relatedness.

Group 1	Group 2	Mean difference 1-2	Std. error	p	95% CI	
					LL	UL
Only office	High office	.278	.298	1.000	-.639	1.196
	Moderate office	.256	.265	1.000	-.560	1.072
	Even split	.589	.265	.576	-.227	1.405
	Moderate telework	.356	.222	1.000	-.327	1.039
	High telework	1.446*	.347	<.001	.379	2.513
	Only telework	.817*	.201	.001	.199	1.435
High Office	Only office	-.278	.298	1.000	-1.196	.639
	Moderate office	-.023	.345	1.000	-1.082	1.037
	Even split	.311	.345	1.000	-.749	1.370
	Moderate telework	.078	.313	1.000	-.883	1.039
	High telework	1.167	.411	.103	-.096	2.430
	Only telework	.539	.298	1.000	-.377	1.455
Moderate office	Only office	-.256	.265	1.000	-1.072	.560
	High office	.023	.345	1.000	-1.037	1.082
	Even split	.333	.316	1.000	-.639	1.305
	Moderate telework	.100	.281	1.000	-.764	.964
	High telework	1.190	.387	.050	-.001	2.381
	Only telework	.561	.265	.735	-.252	1.375
Even split	Only office	-.589	.265	.576	-1.405	.227
	High office	-.311	.345	1.000	-1.370	.749
	Moderate office	-.333	.316	1.000	-1.305	.639
	Moderate telework	-.233	.281	1.000	-1.097	.631
	High telework	.857	.387	.588	-.334	2.048
	Only telework	.228	.265	1.000	-.585	1.042
Moderate telework	Only office	-.356	.222	1.000	-1.039	.327
	High office	-.078	.313	1.000	-1.039	.883
	Moderate office	-.100	.281	1.000	-.964	.764
	Even split	.233	.281	1.000	-.631	1.097

High telework	High telework	1.090	.359	.057	-.014	2.194
	Only telework	.461	.221	.806	-.219	1.141
	Only office	-1.446*	.347	<.001	-2.513	-.379
	High office	-1.167	.411	.103	-2.430	.096
	Moderate office	-1.190	.387	.050	-2.381	.001
	Even split	-.857	.387	.588	-2.048	.334
Only telework	Moderate telework	-1.090	.359	.057	-2.194	.014
	Only telework	-.629	.346	1.000	-1.694	.436
	Only office	-.817*	.201	.001	-1.435	-.199
	High office	-.539	.298	1.000	-1.455	.377
	Moderate office	-.561	.265	.735	-1.375	.252
	Even split	-.228	.265	1.000	-1.042	.585
	Moderate telework	-.461	.221	.806	-1.141	.219
	High telework	.629	.346	1.000	-.436	1.694

N=218

Appendix 9

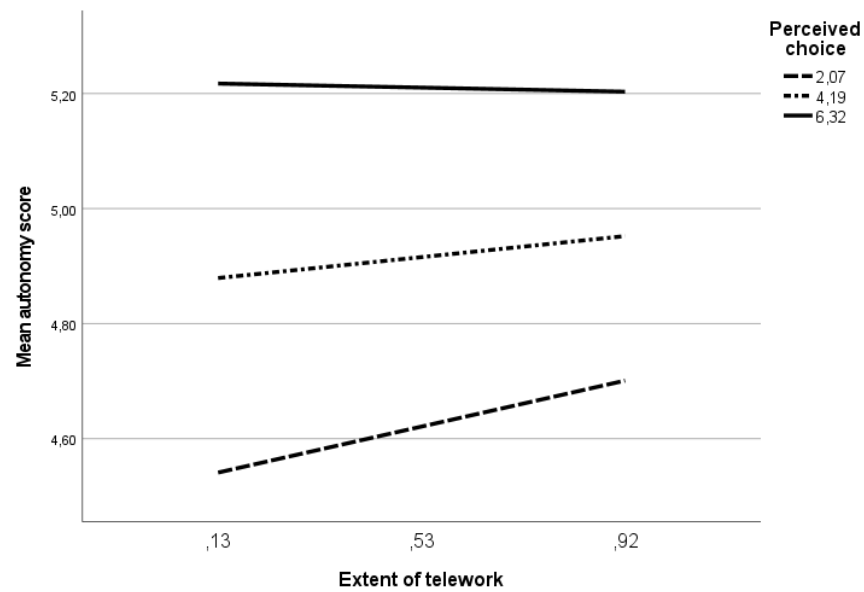
Table 32. Paired samples t-test.

	Paired differences mean	Std. Deviation	Std. Error Mean	t	Two-Sided p	95%CI LL, UL
Telework extent (Actual - Choice)	.118	.299	.020	-5.823	p<.001	-.158 -.078
N=218						

Table 33. Teleworking extent - Choice.

Work group	N (218)	%	cum %
Only office	24	11.0	11.0
High office	10	4.6	15.6
Moderate office	20	9.2	24.8
Even split	40	18.3	43.1
Moderate telework	49	22.5	65.6
High telework	9	4.1	69.7
Only telework	66	30.3	100.0

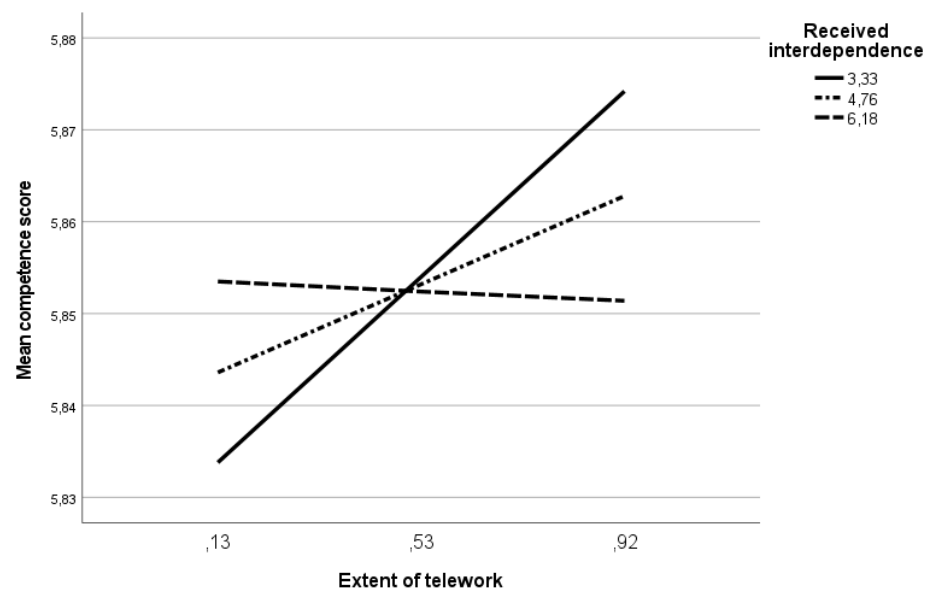
Appendix 10



Note: Effects for -1 SD and +1 SD

Figure 13. Simple slope.

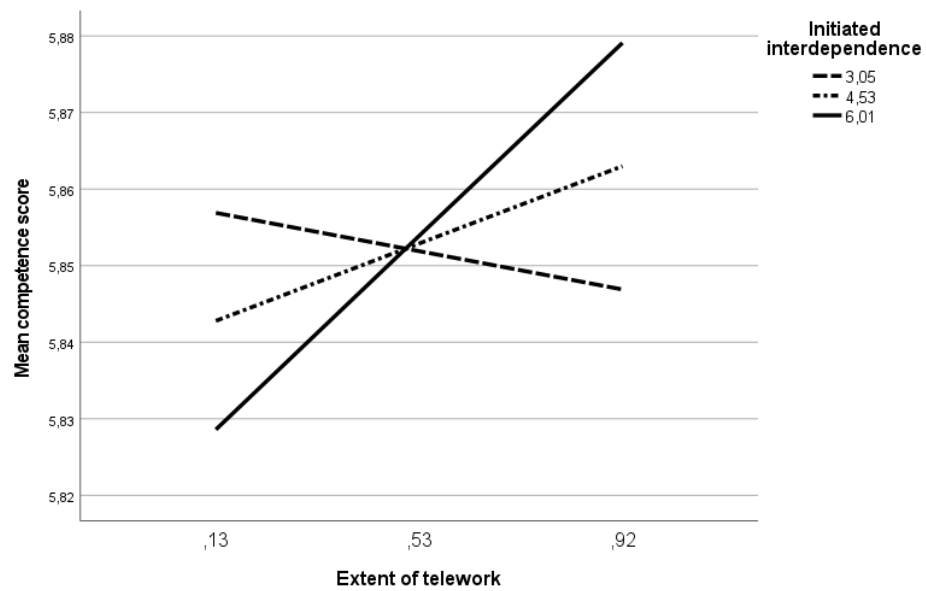
Moderation variable: Choice



Note: Effects for -1 SD and +1 SD

Figure 14. Simple slope.

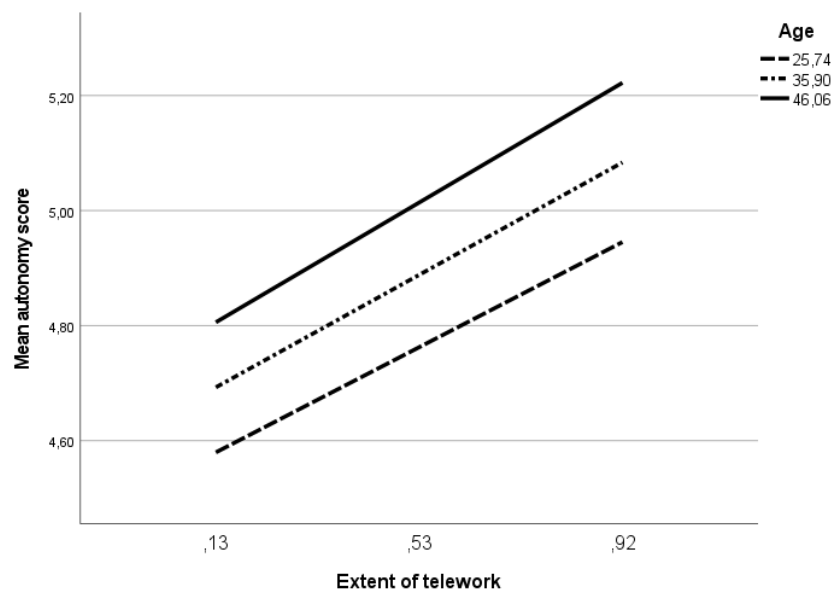
Moderation variable: Received interdependence



Note: Effects for -1 SD and +1 SD

Figure 15. Simple slope.

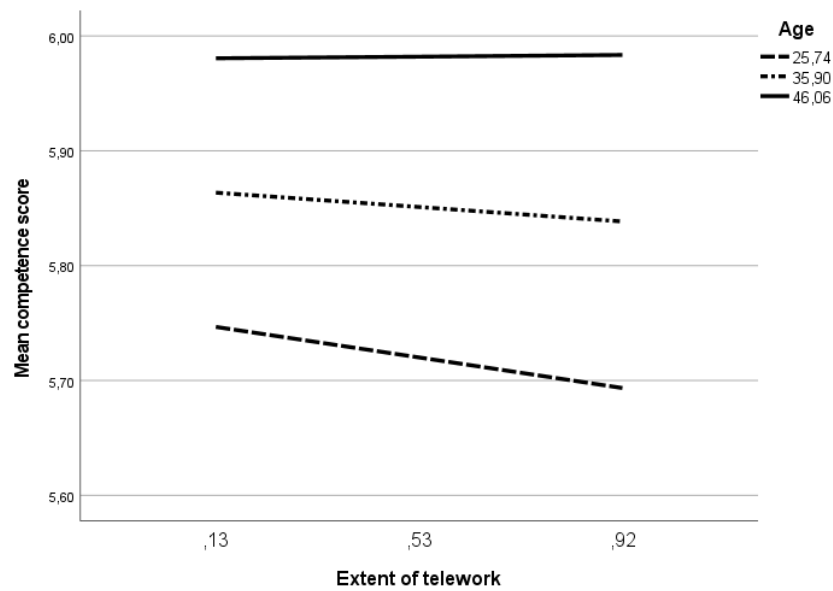
Moderation variable: Initiated interdependence



Note: Effects for -1 SD and +1 SD

Figure 16. Simple slope.

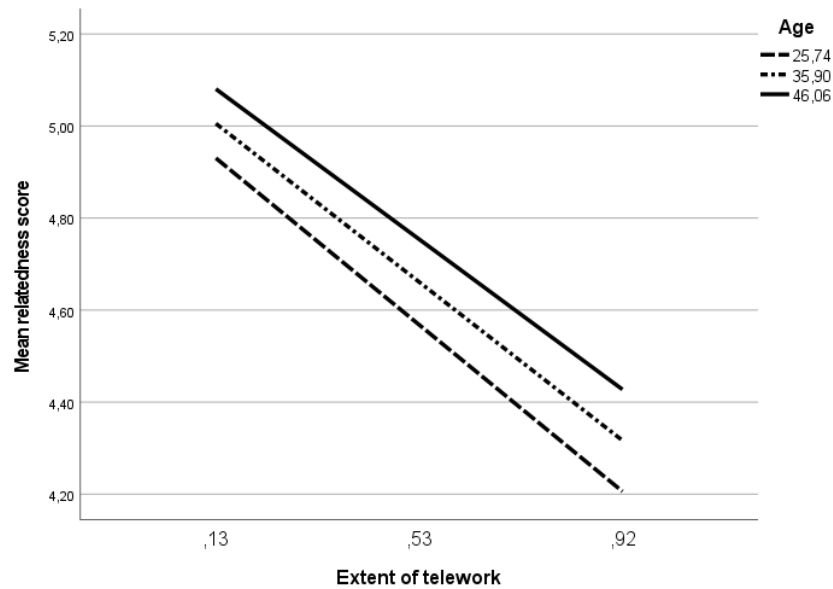
Moderation variable: Age



Note: Effects for -1 SD and +1 SD

Figure 17. Simple slope.

Moderation variable: Age



Note: Effects for -1 SD and +1 SD

Figure 18. Simple slope.

Moderation variable: Age

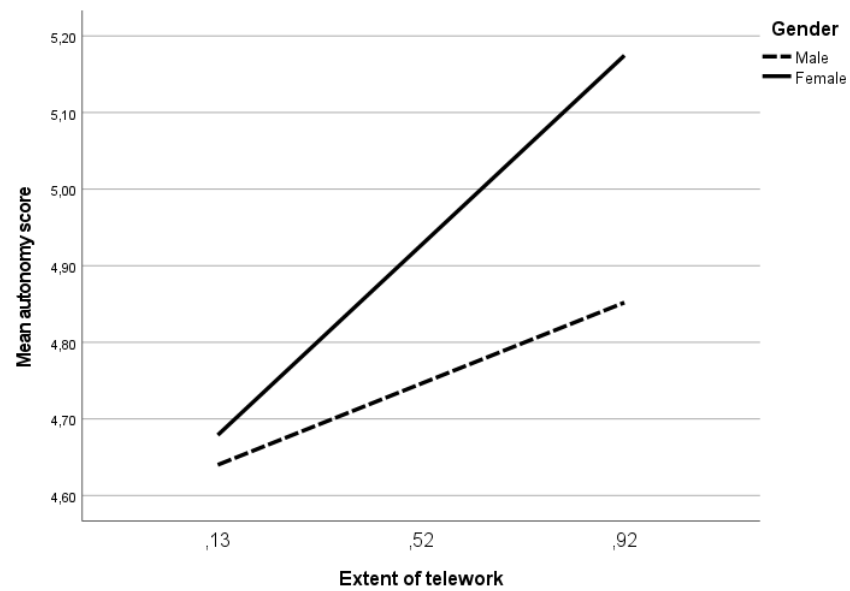


Figure 19. Simple slope.
Moderation variable: Gender

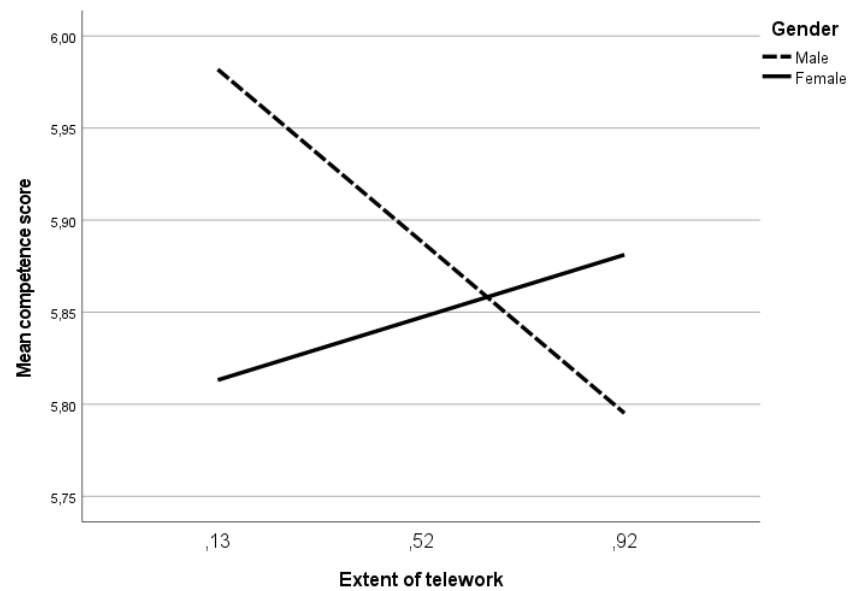
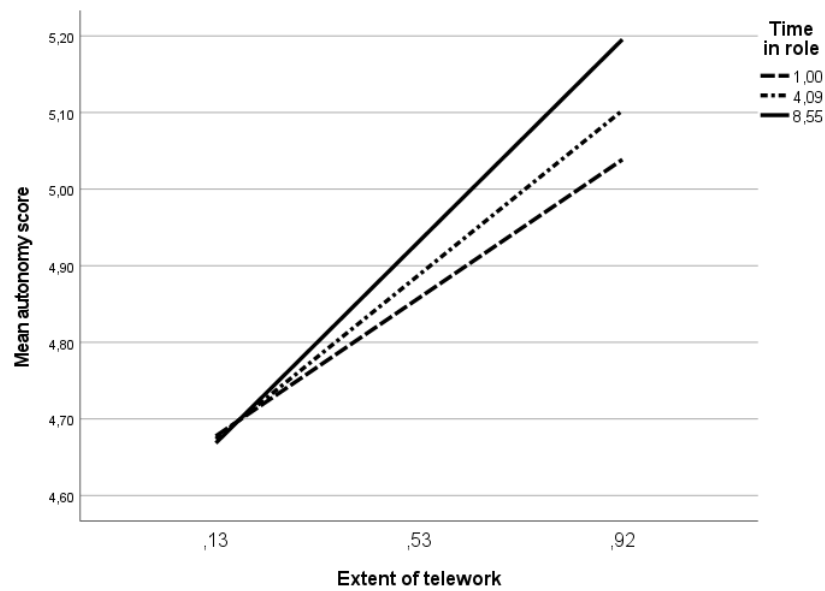


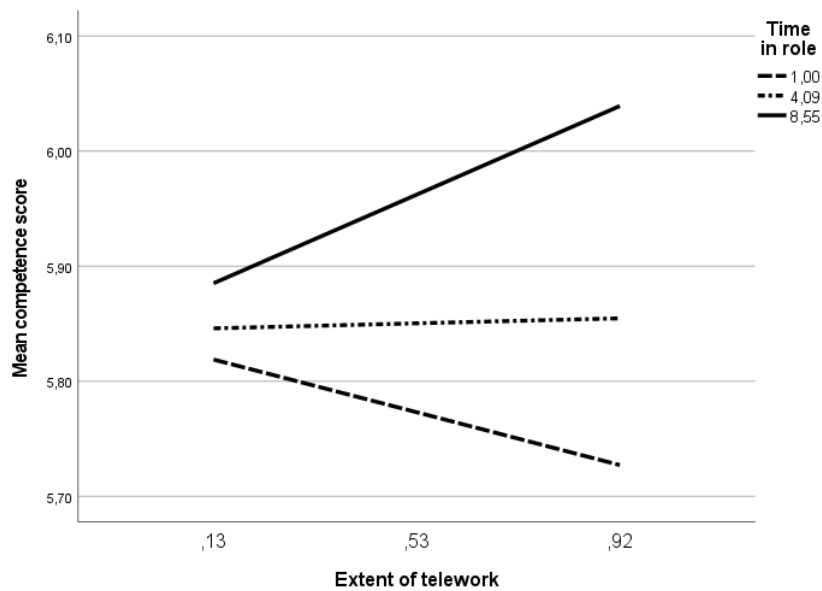
Figure 20. Simple slope.
Moderation variable: Gender



Note: Effects for -1 SD and +1 SD

Figure 21. Simple slope.

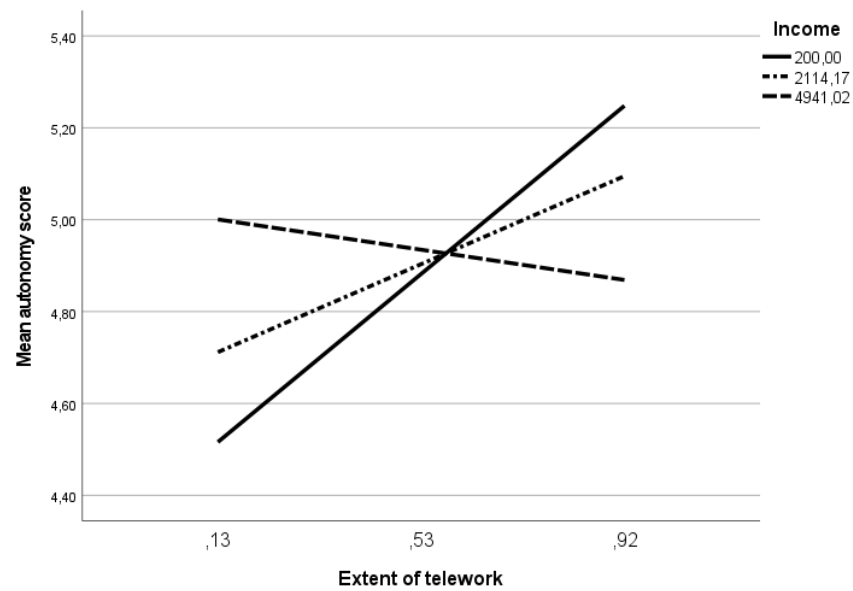
Moderation variable: Time in role



Note: Effects for -1 SD and +1 SD

Figure 22. Simple slope.

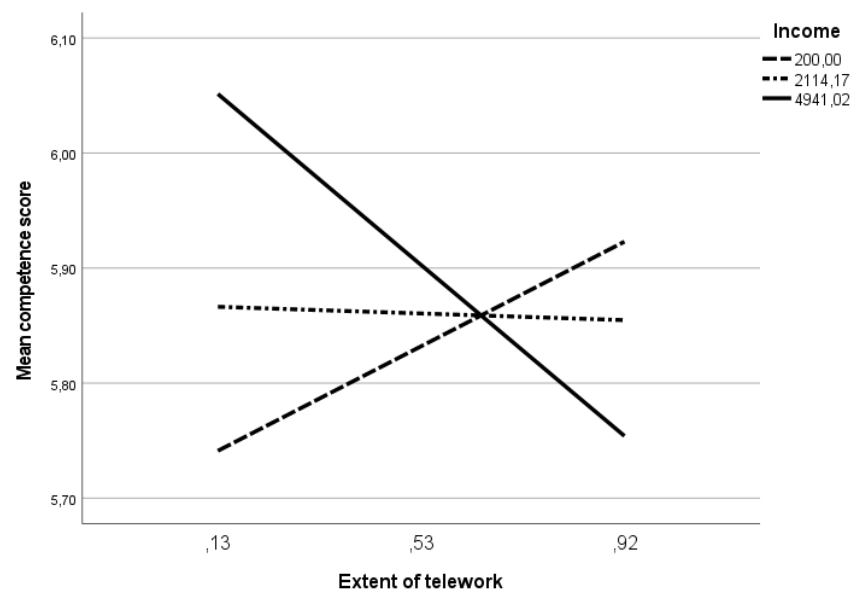
Moderation variable: Time in role



Note: Effects for -1 SD and +1 SD

Figure 23. Simple slope.

Moderation variable: Income



Note: Effects for -1 SD and +1 SD

Figure 24. Simple slope.

Moderation variable: Income