Master Thesis

The future of working: A 2020 perspective on loneliness

The impact of home or work demands, working from home and having children on loneliness via work-life balance

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Abstract

This study initiates research on the variables workload and loneliness, and how they interact. Workload, expressed in demands, can cause loneliness by weakening a person's work-life balance. While this has been established already, the recent COVID-19 pandemic has considerably affected employees' work and private lives as people work from home and had to reduce their social contacts, which changed the environment previous research was conducted in. Furthermore, this research will look into the area of home demands. Limited research on home demands and, in combination with the new working environment, makes working from home a common yet underexplored solution to tackle the pandemic. Further, working from home means mixing the work and the private domain, thereby raising the importance of home demand exploration. Empirical data gathered in a group of 288 respondents shows that work and home demands can lower work-life balance and increase loneliness indirectly, but only home demands have a significant direct impact on loneliness and are significant in combination with working from home and having children.

Keywords: Home demands, work demands, work-life balance, loneliness, JD-R model, COVID-19, working from home

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1. Introduction

The recent trends in the COVID-19 pandemic have forced companies to rethink their way of working. For example, Twitter released a statement that from now on, they will allow all their employees to continue working from home, indefinitely (Brownlee, 2020). Shortly after, Facebook and others followed the announcement suggesting that all employees will work from home at least until 2021(Kelly, 2020). However, not all innovative tech companies seemed fond of the working from home spirit, as Netflix CEO Reed Hastings said that working from home is "a pure negative" and leads to lower productivity (Flint, 2020). Naturally, this creates curiosity about whether working from home can be placed in an overall 'good' or 'bad' category and what factors this depends on. Other than for curiosities' sake, this topic is very relevant for many people and companies as COVID-19 forced many to work from home in the first wave and might repeat this during a second wave later in 2020 and 2021 (Rosenbaum, 2020); thereby creating a completely new dimension of working (Von Gaudecker, Holler, Janys, Siflinger, & Zimpelmann, 2020). With companies like Twitter and Facebook deciding on the future of working and the relation between work and private life, this begs the questions what foundations these decisions were based on and whether these decisions were the right ones.

Further development about the new dimensions of work will not only support companies but also help employees to adjust, as "most individuals are exposed to an unprecedented stressful situation of unknown duration" (Altena et al., 2020, p. 1). For employees, working from home can allow problems to arise, one of which is the blend of the work and the private domain (Clark, 2000). Mixing the work and private domain can blur the lines between the two, resulting in an unclear differentiation of where the work domain stops, and the private domain starts. For a person that has multiple high demands, the blend of the domains can weaken their work-

life balance (Crosbie & Moore, 2004; Geurts, Kompier, Roxburgh, & Houtman, 2003). A weak work-life balance can lead to loneliness, which in turn causes lower productivity and health-related problems (Bartoszek, Walkowiak, Bartoszek, & Kardas, 2020; Holt-Lunstad, Smith, Baker, Harris, & Stephenson, 2015; Ozcelik & Barsade, 2018; Valtorta, Kanaan, Gilbody, Ronzi, & Hanratty, 2016). The border between the work and the private domain is weakened even further by sharing a household with children, as children are also affected by the lockdown and require more attention from their parents, which further harms their work-life balance (G. Wang, Zhang, Zhao, Zhang, & Jiang, 2020). Contrary, a person that can maintain a strong work-life balance, can protect him or herself from downsides such as loneliness (Gambles, Lewis, & Rapoport, 2006). Therefore, this research will consider the impact of workload, expressed in demands, on loneliness, with 'work-life balance' as the mediating variable and 'working from home' and 'children' as the moderating variables (Figure 1).

By doing so, the Job Demand Resource (JD-R) model (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001) will be used as the underlying theory for this analysis. The JD-R model considers demands and resources in a person's life. This research will focus on the demand side of the model, where demands can be physical, psychological, or organizational and require constant cognitive and emotional effort, and thus, represent a certain psychological and/or physical cost (Bakker, Demerouti, & Verbeke, 2004).

The present study makes contributions in two areas of research. First, while the JD-R model has been applied to similar variables before, due to the pandemic and the changed circumstances, it has become of relevance once again. The COVID-19 outbreak has transformed the way we interact with our workplace that, for many people, is their home now. By conducting the same research under presently different circumstances, the outcome of the model contributes to the theoretical contributions.

Second, demands in the JD-R model were investigated already and it was concluded that a more detailed perspective of demands was necessary to further understand them (De Jonge, Mulder, & Nijhuis, 1999; Le Blanc, Bakker, Peeters, van Heesch, & Schaufeli, 2001). Specifically, the area of home demands has been investigated poorly (Hakanen, Schaufeli, & Ahola, 2008). For that reason, the second theoretical contribution of this research is the private aspect of the JDR-model. Therefore, demands will be divided into home demands such as buying groceries, taking care of elderly, etc. (Bakker, Demerouti, & Dollard, 2008) and work demands, such as stress, role ambiguity, and emotional demands (Bakker & Demerouti, 2007). Thus, the research question for this paper will be:

How does work-life balance mediate the relationship between home and work demands and loneliness? How does working from home and having children moderate these effects?

2. Theory and Hypotheses

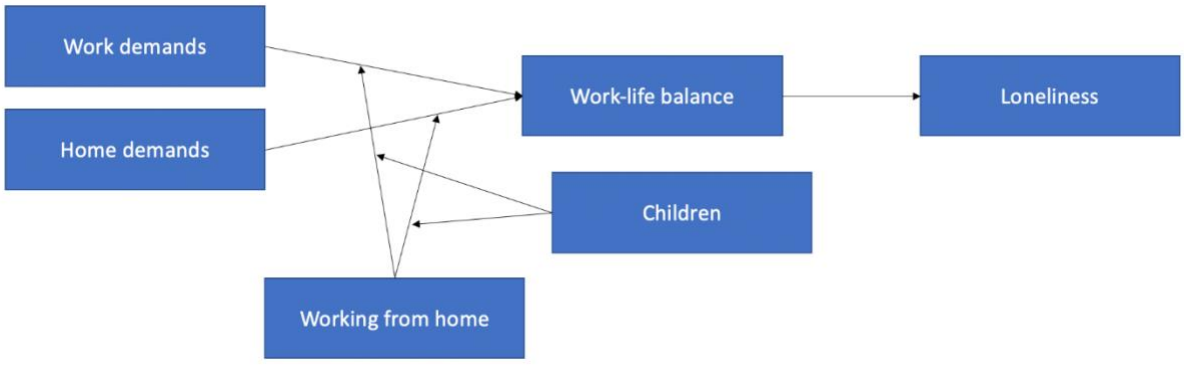


Figure 1. Display of the research model.

2.1 Introduction to Hypothesis development

2.1.1 Demands: Work demands and home demands

Figure 1 displays the conceptual model that this research will follow. The figure above was created with the JD-R model in mind, which considers demands and resources in an individual's life. Focusing on the demands, the JD-R model has mainly considered work demands, which might be misleading, as people are also exposed to home demands that can

require a significant amount of effort, especially when working from home (Berardo, Shehan, & Leslie, 1987; Peeters, Montgomery, Bakker, & Schaufeli, 2005). Therefore, this research will extend the JD-R model with the home domain. One of the theoretical contributions that this research is trying to establish is that, within the JD-R model, home demands can impact work-life balance as much as work demands. Therefore, demands are split into work demands and home demands, each will be used as the independent variable (Figure 1).

2.1.2 Clarification of theories

To aid the argumentation in the hypothesis build-up, theories other than the JD-R model are discussed in this research. These theories include the Depletion Argument, which states that a human's energy resources are finite (Edwards & Rothbard, 2000) and the Border Theory, which states that there are usually two domains in a person's life (the work domain and the private domain), which are separated by strong or weak borders and these borders allow or inhibit work-life balance (Clark, 2000).

The JD-R model and the Border Theory are similar, meaning that the JD-R model and the Border Theory can be applied in harmony; however, some clarification is necessary and will be important throughout this thesis to avoid confusion. The JD-R model suggests that there are demands and resources in a person's life, which can appear at work and in private. The Border Theory suggests that there are two domains, the work domain and the private domain. The work domain is location independent, meaning that work can occur in an office or at home. When additionally considering the independent variables, work demands and home demands, the model can be confusing with these two theories, as it is easy to assume that i.e., home demands (JD-R model) are part of the private domain (Border Theory), or that the work domain (Border Theory) only focuses on the workplace demands (JD-R model), both of which are false assumptions. To avoid this, the following research specific clarifications are made: (1) Any

demand in a person's day will be considered part of the work domain, independent of the location that they occur at (workplace or home) and (2) the private domain is only entered after work and is free of demands. These clarifications are necessary in this research, to suitably apply the concept work-life balance, where the private domain can compensate for demands from the work domain (work demands and home demands). Otherwise, if home demands were part of the private domain, it would not be possible to balance the work domain (work demands) with the private domain (home demands), i.e., balancing demands with demands.

2.1.3 The environment of the research

In the current COVID-19 pandemic, many people were forced to work from home and will continue to do so during the second and third wave (Rosenbaum, 2020). The lockdown is the context that this research was conducted in, and it should be noted that it likely influences this research. The consequences of the lockdown represent a demand, in a way that people are restricted in their freedom to move and socialize (Doward, 2020; Government.nl, 2020), which can harm the work-life balance (de Jong Gierveld, Van Tilburg, & Dykstra, 2006; Steptoe, Shankar, Demakakos, & Wardle, 2013; Weiss, 1973). In the following, the hypothesis specific theory is discussed, and more variables are added to the model while progressing through the hypotheses.

2.2 Hypothesis 1. Work and home demands, work-life balance, and loneliness

2.2.1 Overview

In Hypothesis 1, work-life balance mediates between work or home demands and loneliness. The foundation of this argumentation is that work or home demands with increasing size become stressors that leave little time to socialize and establish a work-life balance, consequently ending in loneliness.

2.2.2 Demands and Work-life balance

Demands in general are not negative. However, when a demand is strong or high, it can become a stressor, impacting other areas of life (Bakker & Demerouti, 2007). Therefore, demands have an underlying, time consuming nature, causing overload, pressure and more (Bakker & Demerouti, 2007; Taris & Schaufeli, 2016). This is the reason, why work-life balance was chosen as a mediator, as demands that turn into stressors, leave no time balance between the work and the private domain, resulting in a weak work-life balance (Kinman & Jones, 2008).

2.2.3 Mediator: Work-life balance

Work-life balance was chosen to mediate between demands and loneliness, in a way that a weak work-life balance cannot compensate for an excess of one domain over the other. Work-life balance is described as the pursuit to have a balance between work and the rest of one's daily life, which has, in recent history, become somewhat unbalanced towards a more work intense life (Crosbie & Moore, 2004). Work-life balance plays an important mediating role since neglecting one's work-life balance harms both, the work and the private domain. For example, if the work domain is stronger, it can lead to a neglect of family time and plans, whereas a strong private domain can impact work in a sense that focusing too much on family plans can inhibit career advancements (Geurts et al., 2003; Janssen, Peeters, de Jonge, Houkes, & Tummers, 2004). Both of those lead to an ultimatum, where one has to choose between career, marriage, and children (Friedman & Greenhaus, 2000). Sacrificing one domain over the other comes at a cost, as work-life balance is not only focused on a balance of physical time but also 'cognitive space', which is important to process daily and societal demands (Ezzedeen, 2004; Friedman & Greenhaus, 2000; Lockwood, 2003). The need for cognitive space is reasoned in the fact that today's work is becoming more intellectual and overworked people can struggle to focus on other and private demands, causing more demands the following day and resulting in cognitive intrusion and loneliness (Lockwood, 2003; Wicklow & Espie, 2000).

An example of cognitive intrusion is when people ‘thought about it when they didn’t want’ (Pillai, Roth, Mullins, & Drake, 2014). That means, facing many demands causes a weak work-life balance and effects such as cognitive intrusion as a result of that, thereby increasing in loneliness.

A weak work-life balance furthermore harms the energy and sleeping pattern of a person and impacts next day cognitive performance, meaning that a weak work-life balance on one day, can result in a worse work-life balance the next day (Ballesio, Ghezzi, Vacca, Ottaviani, & Lombardo, 2020). Therefore, work-life balance stands between the work domain and the private domain, in a way that a good work-life balance can prevent superiority of one domain over the other. Consequently, a good work-life balance would enable enough physical and cognitive time and allow for energy, sleep, cognitive, and social recovery, thereby preventing loneliness (Ballesio et al., 2020; Friedman & Greenhaus, 2000; Lockwood, 2003; Wicklow & Espie, 2000).

2.2.4 The relationship between work-life balance and loneliness

Loneliness can result from having a weak work-life balance, as spending more time in the work domain leads to less time in the private domain, and therefore loneliness (Gambles et al., 2006; Harris & Foster, 2008; Pocock, van Wanrooy, Strazzari, & Bridge, 2001). Loneliness can be defined as a multifaceted set of feelings that arises when personal and social needs are not satisfied (S. Cacioppo, Grippo, London, Goossens, & Cacioppo, 2015). Those needs are not satisfied when a person works long hours and gives up a part of their family life for work, which also origins tiredness and little socialization when the family spends time together (Gornick & Meyers, 2003; Harris & Foster, 2008; Lewis, Rapoport, & Gambles, 2003). Moreover, loneliness can arise despite being surrounded by family and friends (Victor, Scambler, Bond, & Bowling, 2000). One reason for that is the above mentioned cognitive

intrusion that results from a weak work-life balance and prevents people from engaging and socializing with their family and friends (Lockwood, 2003).

2.2.5 Hypotheses

To conclude, the number of work or home demands influence a person's loneliness by harming their work-life balance. This is argued as demands can turn into stressors, meaning that big or many demands leave little room for the private domain. This will be tested for both, home demands and work demands, to see whether there is a significant difference between them.

H1A: Work-life balance mediates the relationship between work demands and loneliness, such that work demands negatively relate to work-life balance and work-life balance negatively relates to loneliness.

H1B: Work-life balance mediates the relationship between home demands and loneliness, such that home demands negatively relate to work-life balance and work-life balance negatively relates to loneliness.

2.3 Hypothesis 2. Work and home demands, work-life balance, working from home, and loneliness

2.3.1 Overview

Hypothesis 1 serves as the foundation for Hypothesis 2, and in Hypothesis 2 the construct is enlarged by the variable 'working from home', which is added as a moderator. Any employee falls in the category of 'working from home' when they engage in remunerated work for a minimum of 20 hours weekly from their home (Crosbie & Moore, 2004).

2.3.2 Theoretical contribution: Working from home

The concept of working from home has changed because of the COVID-19 pandemic, and as such, raises the need for new insights and represents a part of the theoretical contributions. The reason for that is, that the pandemic took away/ reduced workers' autonomy, flexibility, and choice to work from a place of their choosing, thus not representing a resource for employees, but a demand (Altena et al., 2020). Working from home during a national lockdown can be compared to social isolation or social restriction, and as such, working from home has not experienced much research (J. T. Cacioppo & Hawkley, 2009; Marinescu, 2017). Because of these special conditions, working from home is part of the theoretical contributions.

2.3.3 Moderator: Working from home

Having established that working from home can be a demand, in combination with work or home demands, it can further reduce social interaction due to the time-consuming nature of demands (Bakker & Demerouti, 2014; Fritz, Yankelevich, Zarubin, & Barger, 2010). The lockdown has also forced people to work from home under the worst circumstances, as there is a lack of choice, a lack of quiet spaces, and a lack of other activities available, meaning that working from home can lead to isolation (Bloom, 2020; Sander, 2019). Moreover, working from home should not be seen as a 'one size fits all' approach, as it depends on the people and their psychological mindset, as some people are not made for working from home (O'Donoghue, 2020; Van Yperen, Rietzschel, & De Jonge, 2014). Therefore, some people are not made to work from home which, in addition to the lack of social interaction, can worsen work-life balance, especially when demands are high.

2.3.4 Border Theory

The Border Theory can help to further understand why working from home represents a demand. The Border Theory suggests that there are two domains in people's lives, the work

domain, and the private domain. Those two domains are separated by a border, which can be strong or weak, and defines where one domain ends and the other domain starts (Clark, 2000). A strong border can separate the two domains while a weak border cannot, allowing spillovers from one domain to the other and therefore harming work-life balance (Bailyn, Drago, & Kochan, 2001; Chesley, 2005; Clark, 2000; Galinsky & Kim, 2000; Shamir, 1992). When working from home, the work and the private domain are separated by a weak border that can easily be penetrated (Kreiner, Hollensbe, & Sheep, 2009; Schieman & Glavin, 2008). To conclude, working from home means less time and energy to fulfill those demands, spillovers between the domains contribute to the severity of a demand and further harm the relationship between demands and work-life balance. Therefore, supporting the suggestion above, a weak separation of the two domains when working from home represents a demand in the JD-R model, negatively impacting the relationship between demands and work-life balance.

2.3.5 Hypotheses

For this hypothesis, it is argued that working from home will harm the relationship between demands and work-life balance because people often did not work from home by choice but were forced by the COVID-19 pandemic and the resulting lockdown, in which case, working from home represents a demand. According to the Border Theory, working from home does not allow for the separation of the work and the private domain, thereby allowing spillovers between the two domains. Both of those arguments influence the relationship between demands and work-life balance, especially when demands are high, thereby representing increasing demands in the JD-R model and causing loneliness. This will be tested for both, home demands and work demands, to see whether there is a significant difference between them.

H2A: Working from home moderates the indirect relationship between work demands, work-life balance, and loneliness such that the relationship between work demands and work-life

balance is even weaker when working from home is high, consequently leading to higher loneliness.

H2B: Working from home moderates the relationship between home demands, work-life balance, and loneliness such that the relationship between home demands and work-life balance is even weaker when working from home is high, consequently leading to higher loneliness.

2.4 Hypothesis 3. Work and home demands, work-life balance, working from home, having children, and loneliness

2.4.1 Overview

Hypothesis 3 is based on the theoretical build-up from Hypothesis 2. In Hypothesis 3, a three-way interaction is tested in which the variable 'children' is added as a second moderator to the moderator 'working from home', making this model a moderated moderated mediation. The variable children was chosen as during the COVID-19 outbreak children, as well as parents, were forced to stay in their home, requiring more time than usual from their parents and therefore representing a greater demand than usual (Cohen & Bosk, 2020; Hamadani et al., 2020).

2.4.2 Additional demand: Children

It was already established that working from home is a demand, and, as children require attention, they represent another. Raising children consumes a considerable amount of time, especially when they cannot go to school or kinder garden, thereby increasing the number of responsibilities for the parents (Crompton & Lyonette, 2006; Peeters et al., 2005). This increased need for attention and responsibilities can lead to parental distress, overwhelming parents with demands (Morelli et al., 2020). In support of this, Hypothesis 2 states that when

working from home the boundaries between the work domain and the private domain are already weak, but when children are introduced into the household, the boundaries become even weaker as children may not 'respect' the boundaries as much as adults do. Therefore, as children are added to the construct, the interaction between the variables increases the size of the demands while also enhancing other demands, such as spillovers between the work and the private domain. To conclude, having children means less time and energy to fulfill other demands, thereby further straining the relationship between demands and work-life balance.

2.4.3 Depletion Argument

This is supported by Depletion Argument, which states that the energy and resources of a person are finite, meaning that if a person's energy capacity is exceeded by the energy consumption of work or home demands, it can harm work-life balance (Edwards & Rothbard, 2000; Rothbard, 2001; Rothbard, Beetz, & Harari, 2020). The reason why the Depletion Argument is introduced is that in Hypothesis 3 the variables work or home demands, working from home, and having children are predicted to interact with each other, increasing the total amount and size of demands. Facing those variables in combination causes a high level of energy depletion, which is proven to negatively impact next day performance (Clarkson, Hirt, Jia, & Alexander, 2010; Wheeler, Briñol, & Hermann, 2007), meaning there is less time for the private domain, thereby explaining the strain on the relationship between demands and work-life balance.

2.4.4 Hypotheses

To conclude, Hypothesis 3 argues that a combined interaction effect between the variables work or home demands, working from home, and having children has a significant impact on loneliness via work-life balance. The arguments presented above state that having children

represents a sufficiently big demand, especially during a lockdown when children aren't allowed to leave to school or kinder garden. In support of that, the depletion argument states that when demands exceed energy levels, a negative relationship between demands and work-life balance is the result. This will be tested for both, home demands and work demands, to see whether there is a significant difference between them. From this, the following hypotheses are concluded:

H3A: There will be a three-way interaction among work demands, working from home, and having children in predicting work-life balance and consequently loneliness. Specifically, the relationship between work demands and work-life balance will be most negative for people working from home and having children, consequently leading to higher loneliness.

H3B: There will be a three-way interaction among home demands, working from home, and having children in predicting work-life balance and consequently loneliness. Specifically, the relationship between home demands and work-life balance will be most negative for people working from home and having children, consequently leading to higher loneliness.

3. Method

3.1 Sample and Data collection

The data was collected in a survey, which was sent out to different countries and was therefore translated to German and Dutch, additional to English, using the double-blind-back-translation procedure (Schaffer & Riordan, 2003). To increase the number of respondents, the survey was carried out in a group of four people of which each shared access to the survey among their network via social media and private messages. As the nationality of the group was half Dutch half German, German and Dutch people are the two biggest groups of participants. The survey was mostly sent to people of interest, i.e., working people, and respondents that filled out the

survey were guaranteed data privacy and anonymity. A total of 478 respondents filled in the survey out of which 288 people fully completed the survey, resulting in a completion rate of 60.8%. Out of the total amount of respondents, 171 were male (58.7%), 117 were female (40.2%). The respondents were between 18 and 65 years old with a mean age of 41.5 years (SD = 13.22). The organizational tenure ranged between 0 and 42 years, with a mean of 10.0 years (SD = 8.9). The average amount of hours worked per week ranged between 0 and 70, with a mean of 37.9 hours a week (SD = 8.8), out of those an average of 24.8 hours a week are worked from home (SD = 15.4). That number increases to 31.5 hours (SD = 14.5) when asked how many hours were spend working from home during the COVID-19 pandemic (period March – June 2020). Regarding the family status, 36 (12.4%) said that they share their household with one child, 67 (23.0%) said two children and 27 (9.3%) said three or more children, meaning that 130 (44.7%) respondents had at least one child. Moreover, 136 (46.7%) people said that they were married, 94 (32.3%) said they were in a committed relationship and only 52 (17.9%) said they were single. Also, 52 (17.9%) people indicated that they had at least one roommate. Lastly, a Paired-Sample Test was conducted to find out if there is a significant difference between the hours working from home during the pandemic and before COVID-19. This is relevant as it indicates if COVID-19 had a significant impact on the working lives of people and therefore if it can be argued that the daily lives of people have significantly changed. The percentage of people working from home before COVID-19 is significantly lower t (287) = - 16.79, p = .000 (M = - .401, SD = .405), indicating that the pandemic has significantly increased the hours a respondent spends working from home.

3.2 Key variables

Work demands. Respondents were assessed by responding to a construct of questions that measured their work demands (Van De Voorde, Veld, & Van Veldhoven, 2016). The construct

containd six items rated on a Likert scale ranging from 1 (‘strongly agree’) to 5 (‘strongly disagree’). The sample items were ‘In your work environment, do you have too much work to do?’, ‘In your work environment, do you have to work extra hard in order to complete something?’, ‘In your work environment, do you have to hurry?’ etc. Cronbach’s alpha was .877.

Home demands. To measure the home demands, the same scale was used as for work demands (Van De Voorde et al., 2016). The difference here was, that instead of ‘In your work environment…’ it said, ‘Outside of your work environment…’. Likewise, it was rated on a Likert scale ranging from 1 (‘strongly agree’) to 5 (‘strongly disagree’). Cronbach’s alpha was .887.

Work-life balance. Respondent’s work-life balance was determined by using a 4-item construct (Daniels & McCarraher, 2000), rated on a Likert scale ranging from 1 (‘strongly agree’) to 5 (‘strongly disagree’). Sample items included ‘I have difficulty balancing my work and non-work activities.’ or reverse questions like ‘Overall, I believe that my work and non-work life are balanced’. Cronbach’s alpha was .894.

Loneliness. Respondent’s feelings of loneliness were assessed by using a six-item loneliness scale (Wu & Yao, 2008), rated on a five-point Likert scale, ranging from 1 (‘strongly agree’) to 5 (‘strongly disagree’). Sample items included ‘I lack companionship’, ‘There is no one I can turn to’, ‘I feel left out’, ‘I feel isolated from others’, ‘I am unhappy being so withdrawn’, and ‘People are around me but not with me’. Cronbach’s alpha was 0.73.

Children. Respondents were asked “How many children life in your house?”. For the purpose of this research, a dummy was created where everyone who had at least one child was included and was considered to have children.

Working from home. Respondents were asked how many hours a week they spend working from home at the time of answering the survey and during the more intense COVID-19 phase (March – June). Then, they were asked how many hours they spend working from home before the COVID-19 crisis. This was relevant to compare the impact of the COVID-19 crisis and the number of people that entered a working from home stage or significantly increased the number of hours spent working from home.

Control variables. Participants were asked demographic questions regarding their living and working arrangement. Regarding their work, participants were asked how much experience (tenure) they had in their job. Tenure was included as it is an indication for a stable working environment (Hochschild, 2001), which could be relevant during a changing working environment. Questions regarding their private life were focused on respondent's social interaction and targeted at social interactions that would likely continue during a pandemic. Therefore, they were asked whether they were in a committed relationship and if they had a partner. Gender was also included to see whether there was a significant difference between male and female respondents. Finally, participants' age was asked, as this would allow insights over the distribution of the data set.

4. Data analysis

4.1 Overall research Information

4.1.1 PROCESS macro

The PROCESS macro by Hayes (2013) uses the ordinary least squares (OLS) regression which assumes that the samples are from a population with a constant variance. The PROCESS macro does not require the standard normal sample distribution assumption and because of its bootstrapping function to determine confidence intervals for indirect effects (Hayes, 2009). The bootstrapping method uses the study as if it were from a larger population and draws (for

this study) 5000 samples and a confidence level of 95% to estimate the indirect effect, from which a confidence interval of the indirect effect is created (Hayes, 2009). The reason why bootstrapping is used is because it produces stable results and results in a high power and therefore a good Type I error control (Hayes, 2009). Furthermore, to have a reliable data output the standard error HC4 (against Heteroscedasticity) was used (Hayes & Cai, 2007).

4.1.2 PROCESS macro application in this research

This research applies Hayes (2009) models 4, 7, and 11. The research construct does not comply with any given layout of the PROCESS macro, therefore the models from this research (models 4,7,11) are run once for each independent variable (IV1: Work demands; IV2: Home demands), amounting to 6 outputs. First, model 4 is run twice, once with the independent variables home demands and work demands with work-life balance as a mediator and loneliness as the dependent variable. For model 7 and model 11, two versions are run, one with home demands as the independent variable and one with work demands as the independent variable. In model 7, only a moderated mediation is tested whereas in model 11 a moderated moderated mediation is tested. Model 7 and 11 have work-life balance as a mediator, loneliness as the dependent variable, working from home as the moderator variable, and either work demands or home demands as the independent variable. The two versions of model 11 additionally have children as a second moderator for the variable working from home, thereby creating a moderated moderated mediation. Table 1 shows a summary of the descriptive statistics of the variables used for this research. This table was created using bivariate correlations between the model variables.

Table 1. Descriptive statistics and correlations among study variables.

Variable	Mean	SD	1	2	3	4	5	6	7	8	10	11	12	13	14	15	16	17	18	19	20	21	22	23	25	26
Work-life balance	3.52	.92																								
General Loneliness	1.52	.36	-.265**																							
Workplace workload	14.88	.83	-.351**	.142*																						
Private workload	2.67	.83	-.342**	.233**	.399**																					
Home office (%)	.64	.38	-.042	-.036	.045	-.014																				
How many children live in your house?	.87	1.08	.063	-.072	.118*	.092	.124*																			
Age	41.49	13.21	.189**	-.080	.087	-.082	.073	.383**																		
Gender[a]	.41	.49	-.018	.045	.002	.129*	-.275**	-.141*	-.172**																	
Work experience	9.99	8.92	.104	-.074	.145*	-.011	-.029	.210**	.639**	-.125*																
Number of children	.40	.96	-.060	.053	-.067	-.112	-.115	-.252**	-.422**	.062	-.268**															
Partner at home[b]	.44	.70	-.156**	.226**	-.013	.017	-.032	-.375**	-.440**	.099	-.316**	.388**														
Job: Telecom	.28	.45	.121*	-.185**	-.103	-.175**	.419**	.298**	.222**	-.334**	.105	-.167**	-.230**													
Job: Retail	.05	.22	-.107	.075	-.022	-.012	-.304**	-.087	-.104	.061	-.075	.181**	.077	-.148*												
Job: Manufacturing	.05	.22	.101	-.001	-.066	-.021	-.155**	.116*	.063	-.098	.087	-.051	-.057	-.148*	-.055											
Job: Other	.08	.28	.094	.024	.031	-.055	-.061	-.077	.058	.097	.053	-.072	.072	-.195**	-.072	-.072										
Job: Healthcare	.09	.30	.031	.017	-.112	-.018	-.200**	.018	.009	.277**	-.060	-.074	-.121*	-.207**	-.077	-.077	-.101									
Job: Rest	.70	.46	-.069	-.058	.107	.065	.391**	.034	-.043	-.224**	-.023	.025	.035	.408**	-.362**	-.362**	-.476**	-.507**								
Country: Germany	.21	.41	-.053	-.027	.247**	.193**	-.120*	-.061	.129*	.014	.241**	-.071	-.110	-.330**	-.009	-.047	.079	-.029	-.013							
Country: Belgium	.01	.12	.014	.012	.070	-.085	.038	-.013	-.063	-.038	-.070	.043	.095	.057	-.028	-.028	-.037	-.039	.077	-.062						
Country: UK	.01	.08	-.025	.081	.070	-.018	.079	-.029	-.016	.016	-.061	.097	.007	-.053	-.020	-.020	-.026	-.027	.054	-.044	-.010					
Country: Other	.02	.15	-.126*	.176**	.103	.121*	-.020	-.127*	-.208**	.099	-.159**	.076	.191**	-.100	-.037	-.037	-.049	-.052	.102	-.083	-.019	-.013				
Relationship: Committed	.32	.47	-.068	-.040	-.022	.047	-.012	-.199**	-.307**	.100	-.230**	.082	-.098	-.053	-.060	-.094	-.079	.127*	.051	-.051	-.081	-.057	.085			
Relationship: Single	.18	.39	-.091	.153**	-.070	-.034	-.066	-.311**	-.372**	-.002	-.245**	.261**	.791**	-.176**	.093	.012	.048	-.124*	.007	-.136*	.099	.069	.102	-.322**		
Relationship: Divorced	.02	.14	.050	.057	.010	-.021	-.046	-.005	.109	.077	-.020	-.062	.187**	-.038	-.034	-.034	.128*	.034	-.066	.042	-.017	-.012	-.023	-.100	-.068	
Relationship: Other	.01	.08	-.059	.008	.011	.008	-.033	-.067	-.099	.101	-.067	.053	.127*	-.053	.169**	-.020	-.026	-.027	-.038	-.044	-.010	-.007	-.013	-.057	-.039	-.012

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

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

[a] For Gender, 0 = ”Male”, 1 = “”Female”

[b] For Partner at home, 0 = “Yes”, 1 = “No”

N = 288

4.2 Analytical approach

4.2.1 Hypothesis 1

Starting with model 4 of the PROCESS macro, it was used to test the mediating effect of work-life balance between the independent variable's work demands (Hypothesis 1A) and home demands (Hypothesis 1B) and the dependent variable loneliness. For Hypothesis 1A, the results in Table 2 Part 1 (R^2 of .197, p = .000) suggest that work demands have a significant negative relationship to work-life balance (coeff. = -.414, p = .000). Table 2 Part 2 (R^2 of .142, p = .008) shows the results with the outcome variable loneliness. The relationship between work-life balance and loneliness is negative and significant (coeff. = -.088, p = .002). Work demands do not have a significant direct effect on loneliness making the relationship insignificant (Effect = .025, p = .397). The conditional indirect effect of work demands on loneliness via work-life balance was significant, as zero was not included in the confidence intervals (CI [0.014; 0.063]). That suggests a full mediation through the mediator work-life balance and thereby confirming Hypothesis 1A.

Table 2. Results of the mediation hypothesis (PROCESS model 4)

Part 1.				Outcome variable: Work-life balance	
	Coeff	SE	p	CI	
				LL	UL
Work demands	-.414	.076	.000	-.563	-.265
Age	.011	.006	.084	-.001	.023
Experience	.002	.008	.783	-.014	.019
Relationship: Committed	.026	.151	.862	-.270	.323
No partner	-.190	.177	.285	-.537	.158
Gender	.092	.123	.452	-.149	.334
Part 2.				Outcome variable: Loneliness	
	Coeff	SE	p	CI	
				LL	UL
Work demands	-.025	.029	.397	-.033	.082
Work-life balance	-.088	.028	.002	-.142	-.032

Age	.002	.002	.497	-.003	.006
Experience	-.001	.003	.819	-.007	.005
Relationship: Committed	-.005	.056	.924	-.117	.106
Partner	-.030	.063	.638	-.153	.094
Gender	-.020	.053	.702	-.124	.084

Note. N = 286, bootstrap sample size = 5000

LL lower limit, UL upper limit, CI confidence interval

For gender: "0" = Male, "1" = Female

For partner: "0" = Yes "1" = No

Hypothesis 1B suggests the same as Hypothesis 1A, just with home demands instead of work demands as the independent variable. As shown below in Table 3 Part 1, home demands also have a significant negative impact on work-life balance (coeff. = -.360, $p < .001$). Table 3 Part 2 with the outcome variable loneliness shows that both, home demands (coeff. = -.078, $p = .015$) and work-life balance (coeff. = -.070, $p = .008$) have a significant, direct and negative relationship with loneliness. The conditional indirect effect of home demands on loneliness via work-life balance was significant, as zero was not included in the confidence intervals (CI [0.007; 0.048]). The direct effect of home demands on loneliness is significant (Effect = .078, $p = .015$). That means Hypothesis 1B is confirmed, however, only a partial mediation can be supported due to the direct relationship between home demands and loneliness.

Table 3. Results of the mediation hypothesis (PROCESS model 4)

Part 1.				Outcome variable: Work-life balance	
	Coeff	SE	p	CI	
				LL	UL
Home demands	-.360	.068	.000	-.493	-.227
Age	.008	.006	.187	-.004	.021
Experience	-.002	.009	.884	-.020	.016
Relationship: Committed	-.011	.151	.940	-.309	.287
Partner	-.158	.187	398	-.526	.209
Gender	.172	.130	.188	-.085	.429
Part 2.				Outcome variable: Loneliness	

	Coeff	SE	p	CI	
				LL	UL
Home demands	-.078	.032	.015	.015	.140
Work-life balance	-.070	.027	.008	-.123	-.018
Age	.002	.002	.443	-.003	.006
Experience	-.001	.003	.859	-.006	.005
Relationship: Committed	.002	.056	.976	-.108	.112
Partner	-.031	.064	.635	-.157	.096
Gender	-.040	.054	.462	-.146	.067

Note. N = 286, bootstrap sample size = 5000

LL lower limit, UL upper limit, CI confidence interval

For gender: "0" = Male, "1" = Female

For partner: "0" = Yes "1" = No

4.2.2 Hypothesis 2

Hypothesis 2A and 2B were tested with the PROCESS macro model 7. In Hypothesis 2A and 2B, the impact of private and work demands was measured on loneliness, with work-life balance as a mediator and working from home as a moderator. The outcomes are recorded in Tables 4 and 5. Table 4 Part 1 (R^2 of .218, p = .000) with the outcome variable work-life balance shows a significant impact from work demands (coeff. = -.440, p = .000). Interaction 1 (coeff. = -.016, p = .923) which measures the interaction between work demands and working from home, is not significant.

Table 4. Results of the moderated mediation hypothesis (PROCESS model 7)

Part 1.				Outcome variable: Work-life balance	
	Coeff	SE	p	CI	
				LL	UL
Work demands	-.440	.073	.000	-.584	-.295
Working from home	-.109	.165	.509	-.433	.216
Work demands x Working from home	-.016	.169	.923	-.350	.317
Age	.013	.006	.040	.001	.024
Experience	.001	.009	.925	-.016	.018

Relationship: Committed	.010	.153	.946	-.290	.311
Partner	-.174	.176	.324	-.521	.172
Gender	.056	.126	.655	-.191	.304

Part 2.				Outcome variable: Loneliness	
	Coeff	SE	p	CI	
				LL	UL
Work demands	.028	.031	.364	-.033	.089
Work-life balance	-.085	.029	.004	-.143	-.027
Age	.001	.002	.546	-.003	.006
Experience	-.001	.003	.834	-.007	.005
Relationship: Committed	-.005	.057	.933	-.116	.107
Partner	-.029	.063	.639	-.153	.094
Gender	-.019	.053	.726	-.123	.086

Note. N = 285, bootstrap sample size = 5000

LL lower limit, UL upper limit, CI confidence interval

For gender: "0" = Male, "1" = Female

For partner: "0" = Yes "1" = No

Table 4 Part 2 (R^2 of .140, p = .010) has the outcome variable loneliness. The conditional indirect effect of work demands on loneliness via work-life balance was significant, for different values of the moderator, as zero was not included in the confidence interval (CI [0.013; 0.066]). However, as the moderator working from home was not significant, the Index of moderated mediation does not support this model (effect = .001, 95% CI [-0.029; 0.032]), concluding that Hypothesis 2A is rejected.

Table 5. Results of the moderated mediation hypothesis (PROCESS model 7)

Part 1.				Outcome variable: Work-life balance	
	Coeff	SE	p	CI	
				LL	UL
Home demands	-.358	.067	.000	-.490	-.226
Working from home	-.147	.167	.380	-.475	.181
Home demands x Working from home	-.076	.171	.655	-.412	.260
Age	.010	.006	.114	-.002	.022

Experience	-.004	.009	.693	-.022	.015
Relationship: Committed	-.028	.152	.853	-.328	.272
Partner	-.138	.186	.460	-.504	.228
Gender	.139	.134	.298	-.124	.403

Part 2.				Outcome variable: Loneliness	
	Coeff	SE	p	CI	
				LL	UL
Home demands	.078	.032	.014	.016	.141
Work-life balance	-.069	.027	.012	-.122	-.016
Age	.002	.002	.484	-.003	.006
Experience	.000	.003	.884	-.006	.005
Relationship: Committed	.002	.056	.965	-.108	.113
Partner	-.031	.064	.632	-.158	.096
Gender	-.038	.054	.480	-.145	.068

Note. N = 284, bootstrap sample size = 5000

LL lower limit, UL upper limit, CI confidence interval

For gender: "0" = Male, "1" = Female

For partner: "0" = Yes "1" = No

Hypothesis 2B stated the same as Hypothesis 2A, just that the independent variable work demands was replaced with home demands. Table 5 Part 1 (R^2 of .184, p = .000) has work-life balance as the outcome variable and found that home demands (coeff. = .078, p = .014), unlike working from home (coeff. = -.147, p = .380), was significantly related to work-life balance. Interaction 1, measuring the interaction between home demands and working from home, was insignificant (coeff. = -.078, p = .655). Table 5 Part 2 (R^2 of .163, p = .005) shows that work-life balance (coeff. = -.069, p = .012) was negatively significant. The conditional indirect effect of home demands on loneliness via work-life balance was significant, for different values of the moderator, as zero was not included in the confidence interval (CI [0.006; 0.047]). However, the interaction between home demands and working from home was not significant, meaning that Hypothesis 2B has to be rejected. This is supported by the index of moderated

mediation (effect = .005, 95% CI [-0.017; 0.032]) which was not significant and thereby not supporting Hypothesis 2B.

4.2.3 Hypothesis 3

Hypothesis 3 is trying to find a three-way interaction between work demands, working from home, and having children, where all variables are predicted to have a negative relationship on the mediator work-life balance and therefore loneliness. Table 6 Part 1 (R^2 of .247, p = .000) shows the model with work-life balance as the outcome variable. All Interaction terms, apart from Interaction 3 with the variables 'working from home' and 'children' (coeff. = .561, p = .046) are insignificant.

In table 6 Part 2 (R^2 of .140, p = .010), work demands are not significantly related to loneliness (coeff. = -.028, p = .364), whereas work-life balance is significant (coeff. = -.085, p = .004). The conditional indirect effect of work demands on loneliness via work-life balance was significant, for different values of both moderators, as zero was not included in the confidence interval (CI [0.005; 0.052]). However, the moderated moderated mediation model that Hypothesis 3 is proposing cannot be supported as the interaction between work demands, working from home, and having children shows that working from home and having children has no significant impact on the relationship between work demands and work-life balance, and thereby neither on loneliness. This is also suggested by the Index of moderated moderated mediation (effect = -.029, 95% CI [-0.107; 0.021]) leading to a rejection of Hypothesis 3A.

Table 6. Results of the moderated moderated mediation hypothesis (PROCESS model 11)

Part 1.				Outcome variable: Work-life balance	
	Coeff	SE	p	CI	
				LL	UL
Work demands	-.552	.096	.000	-.741	-.363
Working from home	-.322	.183	.080	-.682	.038

Work demands x Working from home	-.214	.205	.299	-.618	.190
Children	.094	.125	.452	-.151	.339
Work demands x Children	.257	.145	.077	-.028	.542
Working from home x Children	.561	.280	.046	.010	1.113
Work demands x Working from home x Children	.342	.350	.330	-.347	1.031
Age	.011	.006	.073	-.001	.023
Experience	.001	.009	.871	-.016	.019
Relationship: Committed	.035	.158	.825	-.277	.347
Partner	-.171	.169	.310	-.504	.161
Gender	.012	.117	.916	-.219	.244

Part 2.				Outcome variable: Loneliness	
	Coeff	SE	p	CI	
				LL	UL
Work demands	.028	.031	.364	-.033	.089
Work-life balance	-.085	.029	.004	-.143	-.027
Age	.001	.002	.546	-.003	.006
Experience	-.001	.003	.834	-.007	.005
Relationship: Committed	-.005	.057	.933	-.116	.107
Partner	-.029	.063	.693	-.153	.094
Gender	-.019	.053	.726	-.123	.086

Note. N = 285, bootstrap sample size = 5000

LL lower limit, UL upper limit, CI confidence interval

For gender: "0" = Male, "1" = Female

For partner: "0" = Yes "1" = No

As displayed in table 7 Part 1 (R^2 of .213, p = .000), Hypothesis 3B is trying to find a three-way interaction between home demands, working from home, and having children and their negative impact on loneliness via work-life balance as a mediator. Home demands have a significant and negative interaction to work-life balance (coeff. = -.379, p = .000). Working from home (coeff. = -.366, p = .060) and having children (coeff. = -.098, p = .422) have no direct significant impact on work-life balance. The interactions between home demands and working from home (coeff. = -.345, p = .121) and home demands and children (coeff. = -.017,

p = .899) are also not significant. The interactions between working from home and children (coeff. = .597, p = .037) are significant. Interaction 4, measuring the interaction between home demands, working from home, and having children (coeff. = -772, p = .036) has a significant impact, indicating support for Hypothesis 3B.

Table 7 Part 2 (R^2 of .163, p = .005) with outcome variable loneliness shows that home demands (coeff. = .079, p = .014) and work-life balance (coeff. = -.069, p = .012) are both significant. As work-life balance and home demands are both direct and significant, it suggests a partial mediation for Hypothesis 3B. The three-way Interaction term 4 (home demands, working from home, and having children) was significant, meaning that having children, home demands, and working from home have a significant relationship on home demands and work-life balance, thereby suggesting support for Hypothesis 3B. The conditional indirect effect of home demands on loneliness via work-life balance was significant, for different values of both moderators, as zero was not included in the confidence interval (CI [0.007; 0.054]). This is also suggested by the Index of moderated moderated mediation (effect = -.053, 95% CI [-0.126; -0.003]) leading to significant support for Hypothesis 3B.

Table 7. Results of the moderated moderated mediation hypothesis (PROCESS model 11)

Part 1.				Outcome variable: Work-life balance	
	Coeff	SE	p	CI	
				LL	UL
Home demands	-.379	.099	.000	-.574	-.184
Working from home	-.366	.194	.060	-.748	.015
Home demands x Working from home	-.345	.222	.121	-.782	.092
Children	.098	.122	.422	-.143	.340
Home demands x Children	-.017	.131	.899	-.275	.242
Working from home x Children	.597	.284	.037	.037	1.156
Home demands x Working from home x Children	.772	.367	.036	.049	1.495

Age	.010	.006	.125	-.003	.022
Experience	.010	.009	.782	-.021	.016
Relationship: Committed	-.013	.158	.934	-.324	.298
Partner	-.119	.179	.508	-.472	.234
Gender	.118	.128	.357	-.133	.369

Part 2. Outcome variable: Loneliness

	Coeff	SE	p	CI	
				LL	UL
Home demands	.079	.032	.014	.016	.141
Work-life balance	-.069	.027	.012	-.122	-.016
Age	.002	.002	.484	-.003	.006
Experience	.000	.003	.884	-.006	.005
Relationship: Committed	.002	.056	.965	-.108	113
Partner	-.031	.064	.632	-.158	.096
Gender	-.038	.054	.480	-.145	.068

Note. N = 284, bootstrap sample size = 5000

LL lower limit, UL upper limit, CI confidence interval

For gender: "0" = Male, "1" = Female

For partner: "0" = Yes "1" = No

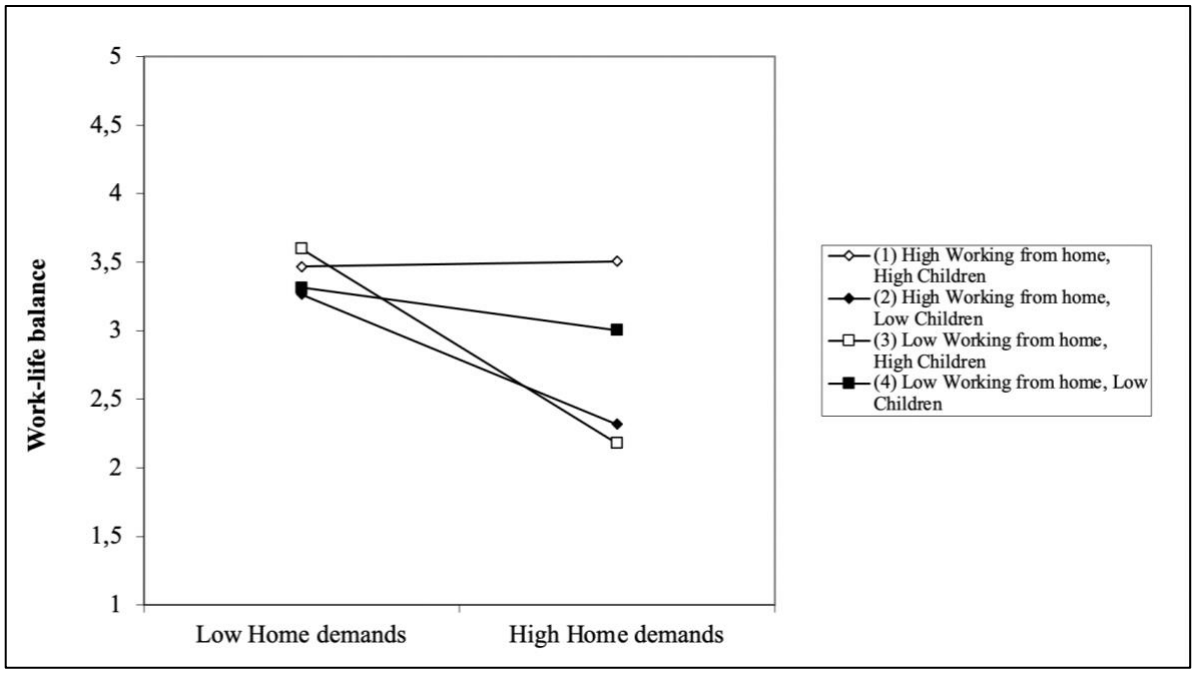


Figure 2. Hypothesis 3B. The impact of home demands, children, and working from home on loneliness

Figure 2 shows the three-way interaction between home demands, working from home, and having children. Figure 2 also shows that work-life balance decreases most when working from

home is low and having children is high, second biggest impact is when working from home is high and having children is low. Unlike hypothesized, for people that spend much time working from home and have children, home demands do not reduce work-life balance. For people that work less time from home and have children, many home demands will harm their work-life balance. For people that don't have children and work from home a lot, many home demands lead to a weaker work-life balance. For people that don't have children and for which working from home is low, many home demands have a slight, negative impact on work-life balance.

4.2.4 Post hoc analysis

Hypothesis 2 found no support, which gives rise to the question why working from home as a moderator does not contribute to the model as planned. One possible reason is that working from home can occur in various social and other situations, such as when living alone, share with roommates, shared with a partner or children, and being able (or not) to afford comforts and luxury in a home. Unlike working from home, taking care of children tends to be more streamlined in a way that it requires a more consistent workload and environment, that does not change as much over time, income level, or marital status. So, I ran the PROCESS macro with model 7 again, with children instead of working from home as only the moderator. Unfortunately, the Index of moderated mediation was not significant for both, work demands and home demands. Having children as a moderator also does not seem to significantly impact loneliness, so it begs the question of whether other living conditions such as relationship status will have an impact.

Therefore, PROCESS macro model 11 was run twice, once with the variables 'partner living at home' and 'working from home' as the moderators and a second time with 'relationship status: single' and 'working from home' as the moderators. The variables 'partner living at

home' and 'relationship status: single' are options, other than children, that might have an impact on feelings of loneliness (Stack, 1998) and can prove that work demands in combination with working from home does impact work-life balance. While for the variable 'partner living at home' there was no significant outcome, for 'relationship status: Single' in combination with work demands as the independent variable the Index of moderated moderated mediation was significant. Considering the data of this research, which shows that that single peoples' age peaks around age 23, it suggests that single people are younger and more prone to feeling lonely when work demands are high. This provides one possible indication that the demographics of these respondents have influenced this research in a way that the majority of respondents were middle-aged and married, resulting in more happiness and higher living standards (Berthoud, Blekesaune, & Hancock, 2009; Green & Hendershott, 2001; Stutzer & Frey, 2006; Waite & Gallagher, 2001).

5. Discussion

5.1 Recap

This research is trying to establish whether work or home demands and their impact on loneliness via work-life balance has changed with the COVID-19 pandemic. Significant support for a changing working environment was found by measuring the hours spend working from home before and during the pandemic. Working from home and having children are discussed to influence this relationship as moderator variables. The reasoning was that factors such as higher exposure to children and working from home significantly influence the relationship between demands and work-life balance.

5.2 Theoretical implications

5.2.1 Summary of the results

The results from the analysis concluded that in Hypothesis 1, both work demands and home demands increase employee loneliness by reducing their work-life balance. In Hypothesis 2, neither Hypothesis 2A nor 2B were supported, meaning that employees' work and home demands, when working from home, do not impact loneliness by lowering their work-life balance. In Hypothesis 3, work demands, when working from home and having children, do not impact loneliness by lowering employees' work-life balance. Home demands do have an impact on loneliness via work-life balance when employees work from home and have children, consequently harming work-life balance and increasing loneliness.

5.2.2 Theoretical implication: COVID-19

This research contributes in two ways to the theoretical implications. First, it shines a light on the COVID-19 pandemic and its effect on the employees. Here, it was found that people spend significantly more time working from home than they did before the pandemic. Also, in COVID-19 times, work-life balance is an effective mediator between work or home demands and loneliness, thereby supporting Friedman & Greenhaus's (2000) suggestion that a lot of demands in one domain will harm work-life balance. Furthermore, the confirmation of the relationship between demands and loneliness via work-life balance supports concepts such as cognitive intrusion, that weaken work-life balance by not allowing space for the private domain, even while being outside of the office. The connection between work-life balance and loneliness is also confirmed and strong in COVID-19 times, thereby joining other studies in support of a better work-life balance to reduce loneliness (Wong, Chan, & Teh, 2020).

One precaution of the COVID-19 pandemic was working from home. Here, one of the previous conclusions was that being forced to work from home, under the current circumstances, can

lead to isolation and represents a demand in the JD-R model. This was not supported in the outcomes of this research, thereby partially disproving the challenging conditions (Bloom, 2020) under which people started to work from home. When working from home by itself is tested, there is no support for work demands or home demands. However, home demands, in combination with working from home and having children is significant, supporting Van Yperen, Rietzschel, & De Jonge (2014), who suggested that working from home is not a 'one size fits all'. This supports the notion that the COVID-19 pandemic does have a negative impact on a some people.

5.2.3 Theoretical implication: JD-R model & home demands

Second, this research tried to advance the research of the JD-R model in the home domain, in particular how home demands compare to work demands. Here, it was found that work demands and home demands both impact work-life balance and indirectly result in loneliness. Unlike work demands, home demands also have a direct relationship to loneliness in all three hypotheses presented. That means that home demands not only affect the work-life balance as much as work demands do, it also significantly impacts loneliness directly. As this was not supported for work demands, it means that home demands are domain-specific, as suggested by Peeters et al. (2005) and work demands seem to have a different relationship with loneliness.

The Border Theory (Clark, 2000) was used to argue that people working from home face two different domains with a weak border between the work and private domain. Here, it was suggested that working from home will cause spillovers between the work and the private domain, causing a weaker work-life balance (Bailyn et al., 2001; Chesley, 2005; Galinsky & Kim, 2000). When working from home is tested as the only moderator, this is not supported, meaning that spillover between the work and private domain is not significantly visible in this study. However, when a person works from home and has children, the interaction with home

demands is significant, supporting previous research from Crompton & Lyonette (2006), Peeters et al. (2005), and Morelli et al. (2020), who found that children require more attention which can overwhelm parents with demands. This, however, only applies when working from home is low and finds less support when working from home is high.

5.3 Practical implications

5.3.1 Working from home, children, work demands and home demands

Facing a combination of demands during the pandemic while working from home does not lead to a better work-life balance. As shown in Figure 2, an employee that works from home, faces high demands, and has no children is likely to have a weaker work-life balance and perceive increasing feelings of loneliness. This should be considered by companies in the long run, that some people, i.e., people that spend a lot of time working from home without children, do not experience the upsides of working from home, and therefore should always have the option to join an office. This outcome is also relevant for people with children, as they should have the option to spend more time at home, consequently increasing their work-life balance (Figure 2). This is supported by the fact that, people who spend a lot of time working from home and have children slightly increase their work-life balance when home demands were high. If people that have children do not spend much time working from home while having high home demands, it will severely impact their work-life balance (Figure 2), meaning if a company separates employees and their children by making employees work in an office, employees' work-life balance will suffer. These results highlight the change in employee's mindsets towards working from home when they have children and high home demands, and how the absence of such option, impacts their work-life balance.

The differing needs when it comes to working environment are supported by the findings from the post hoc analysis, which suggests that work demands have a significant indirect impact on

loneliness, when tested in combination with working from home and 'relationship status: Single', meaning that single people become lonely when work demands are high and they are working from home. This concludes that working from home should only ever be a custom solution and not applied as a general measure, as depending on various circumstances and psychological mindsets of employees (O'Donoghue, 2020; Van Yperen et al., 2014), it can have negative side-effects. This confirms the impact that the COVID-19 pandemic has, as it equally forces people to work from home, thereby ruining work-life balance and causing loneliness for some.

As part of the theoretical contributions, it was found that work demands and home demands can have a different impact on loneliness, in a way that home demands can cause loneliness directly and work demands cannot. A possible cause is that facing work demands makes social interactions more likely, whereas the same applies less to home demands (Song & Olshfski, 2008). However, home demands, under certain circumstances, do not negatively impact work-life balance and thereby loneliness. That is the case, when a person works from home and has children. If home demands occur when a person has his/her children around, the children may count as 'social interaction', and do not seem to harm work-life balance or loneliness. One explanation is, that children can bring love and companionship, thereby reducing the lack of social interaction and loneliness (Hoffman & Manis, 1979).

5.3.2 Home demands and work demands

While acknowledging that work demands and home demands impact people differently, in some way they are also similar, such as their direct relationship on work-life balance and indirect relationship to loneliness. That means that home demands, just as work demands, should receive equal attention in future analysis of employee's well-being. To counteract a weak work-life balance resulting from an imbalance between the work and the private domain

(Crosbie & Moore, 2004), this research's insights into home demands can help to understand and develop resources that enable home demands to compete with work demands.

5.4 Limitations and further research

5.4.1 Limitations

Demographics had some impact in this study, the average age and marital rate in this research are rather high and most respondents lived in the Netherlands. While that provides a lot of specific insights, it also shows many drawbacks. Some of them are, that people with these kinds of demographics are presumably less likely to feel lonely, compared to people that are more exposed to lockdown restrictions, are younger, live alone, have lower living standards, and lower financial means. Moreover, reverse causality is a limitation, meaning that it cannot be determined if demands lead to more loneliness or loneliness leads to higher demands. Moreover, the level of restriction, such as freedom of movement and degree of national lockdown during the outbreak should have been asked to the respondents and included in the construct of this survey, to determine if some people were more impacted by the lockdown than others. Finally, some interesting control variables in this research would have been questions such as: "Do you live in a house or a flat?" "How old are your children?", "Does your home have a dedicated office space?", and "How strong/weak do you perceive the borders between your work domain and your private domain?" All of these questions could have provided more insights regarding the quality of work-life balance, work and home demands, and loneliness.

Another shortcoming of this research is that it only applies to working people. As this research tries to establish the impact of an interaction effect in the private domain, it would have been interesting to analyze the home demands of stay-at-home fathers and stay-at-home mothers, in

relative comparison to their working partners. This could provide more insights about the different effects between home demands and work demands.

5.4.2 Further research

Further research on this topic should include a more in-depth analysis of the JD-R model and the private aspect of workload. That means, while in this research home demands represent a small fraction of total demands, it has the same significant impact as work demands and even a stronger impact on loneliness. Here, it could be interesting to conduct further research on why and how home demands are related to loneliness and why work demands are not. Moreover, as the impact of home demands has been established, analyzing resources that could help people tackle home demands, and thereby reduce loneliness and work-life balance would be of high relevance.

Furthermore, this research assumes that the outcomes from this analysis do not apply to younger people because of their underrepresentation in the data. The respondents of this dataset show a high average age and a high rate of committed relationships or marriages. Younger people's relationships and marital statuses are very different compared to mid-aged/ older respondents and so are their income and living conditions, thereby impacting their mental wellbeing (Veenhoven, 1991). Therefore, the true impact of the lockdown restrictions leave room for interpretations among younger generations and should be a topic of interest for further research.

Shortly before the completion of this thesis, CNN released an article with the following title: "In Japan, more people died from suicide last month than from Covid in all of 2020. And women have been impacted most" (Sher, 2020; S. Wang, Wright, & Wakatsuki, 2020). Here, it is described that the pandemic has caused suicide rates to strongly increase and suicidal thoughts to double. The main reasons are COVID-19 caused layoffs, the resulting financial

struggles, and mental health issues (S. Wang et al., 2020), showing the importance of research related to this topic.

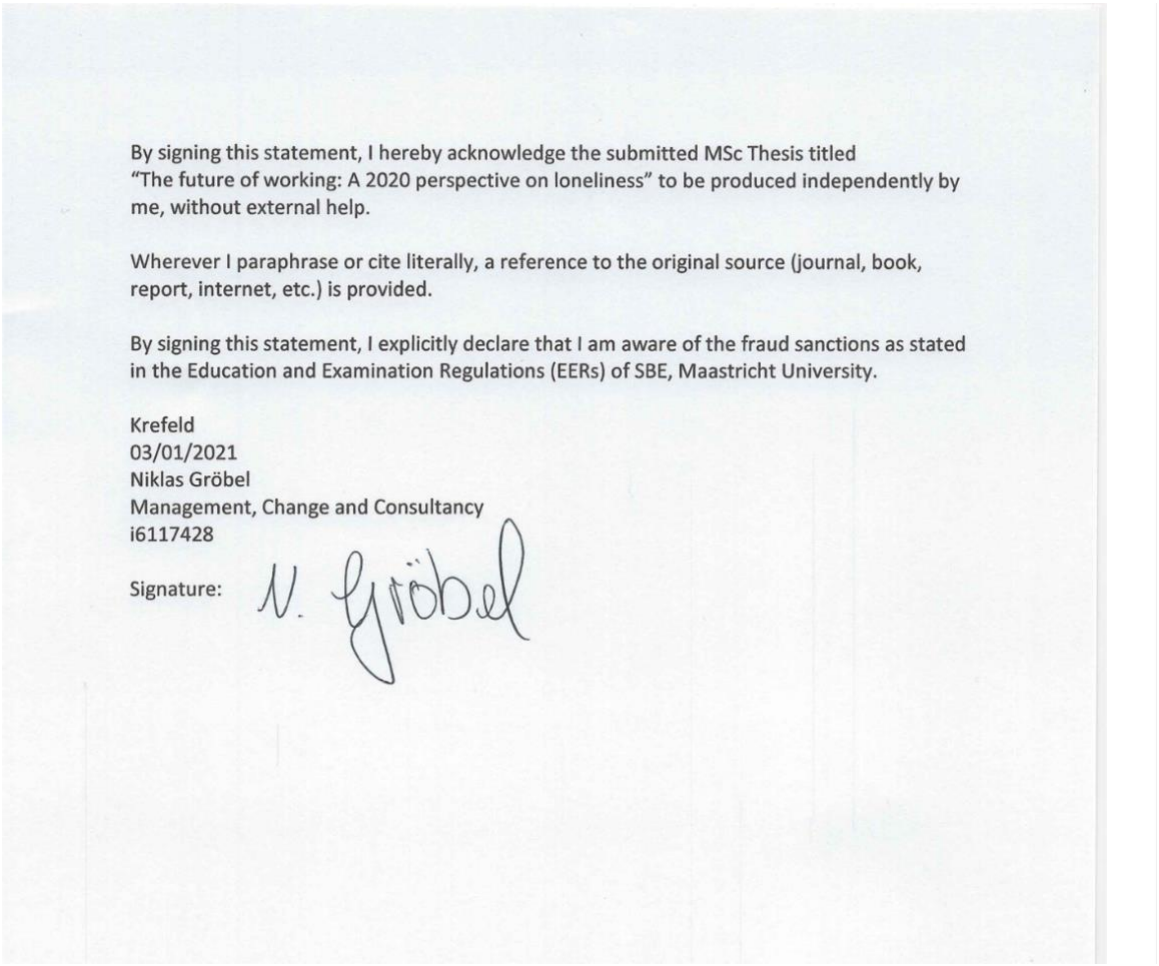
8. Appendices

8.1 Figures

8.1.1 Survey Items

(McCarraher & Daniels, 2000)	Work-life balance	Likert scale ranging from 1-5 and from strongly disagree – strongly agree	I currently have a good balance between the time I spend at work and the time I have available for non-work activities. I have difficulty balancing my work and non-work activities. I feel that the balance between my work demands and non-work activities is currently about right. Overall, I believe that my work and non-work life are balanced.
Wu & Yao, 2008	General loneliness	Likert scale ranging from 1-4 and from never – all the time	I lack companionship There is no one I can turn to I am an outgoing person I feel left out I feel isolation from others I can find companionship when I want it I am unhappy being so withdrawn People are around me but not with me
(Van De Voorde et al., 2016)	Work demands	Likert scale ranging from 1-5 and from strongly disagree – strongly agree	In your work environment, do you have too much work to do? In your work environment, do you have to work extra hard in order to complete something? In your work environment, do you have to hurry? In your work environment, do you find that you are behind in your work activities? In your work environment, do you have problems with the work pace? In your work environment, do you have problems with the work pressure?
(Van De Voorde et al., 2016)	Home demands	Likert scale ranging from 1-5 and from strongly disagree – strongly agree	Outside of your work environment, do you have too much work to do? Outside of your work environment, do you have to work extra hard in order to complete something? Outside of your work environment, do you have to hurry? Outside of your work environment, do you find that you are behind in your work activities? Outside of your work environment, do you have problems with the work pace? Outside of your work environment, do you have problems with the work pressure?

8.1.2 Statement of originality



By signing this statement, I hereby acknowledge the submitted MSc Thesis titled "The future of working: A 2020 perspective on loneliness" to be produced independently by me, without external help.

Wherever I paraphrase or cite literally, a reference to the original source (journal, book, report, internet, etc.) is provided.

By signing this statement, I explicitly declare that I am aware of the fraud sanctions as stated in the Education and Examination Regulations (EERs) of SBE, Maastricht University.

Krefeld
03/01/2021
Niklas Gröbel
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- The end.