The Relationship between the Degree of Remote Working and Remote Work Exhaustion

Tara Marks (8263965)

Utrecht University

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Supervisor: Onur Sahin

Second Assessor: Dr. Jan Fekke Ijbema

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Abstract

Remote working is a practice that has newly become adopted around the world as a consequence of the COVID-19 pandemic. The purpose of this study was to investigate how the degree of remote working relates to a relatively new phenomenon, namely remote work exhaustion, and a better-known outcome, namely job engagement. A survey study with 215 participants showed that, contrary to hypothesis, the degree of remote work did not relate to remote work exhaustion or job engagement. Furthermore, there was no support for the role of perceived inclusion as a mediator in these relationships. Finally, sociability of the online environment and individual sociability did not moderate hypothesised relationships. Future research should focus on different variables when investigating the effects of remote work exhaustion. It should also explore remote working as a demand and a resource simultaneously. Future research should also investigate the big five personalities when conducting further research on the topic.

Keywords: degree of remote working, remote work exhaustion, job engagement, perceived inclusion by colleagues, individual sociability, sociability of the online environment.

Introduction

Remote working, which entails working away from the traditional office setting, commonly in other locations such as cafes, public libraries, and parks (Lojeski & Reilly, 2020), has become globally adopted throughout the world in a short period of time in result of the COVID-19 pandemic (Hackney et al., 2022). Employers now offer a spectrum of working options which range from complete remote working to a hybrid working schedule (Iqbal et al., 2021). The increase in the number of employees working remotely has given rise to the need to study and understand how this new mode of working impacts individual outcomes such as employee engagement and well-being (Gijs et al., 2021; Mustajab et al., 2020; Rahman & Arif, 2020; Saurombe et al., 2022).

Major benefits have been found as a result of both complete remote working and working with a hybrid system, these include a reduction in commuting, increased motivation, and flexibility (Aksoy et al., 2023; Sonnenschein et al., 2022; Chatterjee et al., 2022). A systemic review carried out by researchers also found that remote working has increased job satisfaction and organisational commitment which can potentially leverage employee engagement (Hackney et al., 2022; Bellani, 2017; Albdour & Altarawneh, 2014). Due to these benefits, it is more than likely that remote working will remain in the future of employment (Barrero et al., 2021; Lazarova, 2020).

However, while many studies highlight the various benefits of remote working, there has also been research that focuses more on its negative effects on employees (Aslan et al., 2022; Becker et al., 2022; Kortsch et al., 2022). For instance, remote employees work for longer hours to prove their productivity to their managers, which can result in feelings of isolation and exhaustion (Saurombe et al., 2022). Exhaustion due to remote working, which has recently been dubbed "remote work exhaustion", has immensely increased over the last few years (Parra et al., 2022). Remote work exhaustion is a new phenomenon which can be defined as the feeling of tiredness or weariness related to working from home (Mihalca et al., 2021; Parra et al., 2022). It can manifest mentally, emotionally, or physically. With more people preferring to work remotely, it becomes important to understand how remote work exhaustion manifests in many workforces (Parra et al., 2022). The current study will aid in filling this gap in literature by further exploring how and under which conditions remote working is related to remote work exhaustion.

Additionally, job engagement will also be investigated as an outcome of remote working, considering that it is a familiar employee outcome that has been well-studied (Saks et al., 2021). Job engagement refers to the fulfilling and positive work-related state of mind of an employee which causes them to display hard work, innovation, loyalty, and an exceptional attitude in their workplace (Sun & Bunchapattanasakda, 2019). In all, job engagement implies that employees have willpower, motivation, and are able to concentrate on their given tasks. However, this dynamic might be affected by remote working (Sun & Bunchapattanasakda, 2019). It is still unclear how and under which conditions remote working relates to job engagement. Hence the

current study will additionally shed light on this aspect by exploring how remote working is related to job engagement.

Furthermore, the current study also aims to explore how remote working influences remote work exhaustion and job engagement with the incorporation of the roles of individual differences, like an individual's sociability. It will also investigate the influence of context, by considering the sociability of the online environment. Furthermore, it will investigate whether the expected relationship between remote working and remote work exhaustion/job engagement is explained by perceived inclusion by colleagues. As such, the current study will advance the literature by incorporating these supplementary variables. This will allow for the further assessment of how and under which conditions remote working can relate to remote work exhaustion and job engagement.

The Effect of Remote Working on Remote Work Exhaustion and Job Engagement Outcomes

A survey conducted by TinyPulse (2021) indicated that 85.65% of fully remote employees experienced the highest levels of exhaustion, whereas this figure was only 24% for hybrid and in-office workers. Fully remote workers were also reported to have a 30% decline in job engagement (PR Newswire, 2022). The results of these surveys suggest that remote working may be demanding for employees.

How the demands of remote work can affect employees is explained by the Job Demand-Resource (JD-R) model developed by Bakker and Demerouti (2007). The JD-R model is a theoretical framework, which describes the interplay between job demands and resources in determining work-related outcomes of an employee. According to this model, job demands refer to the psychological, physical and/or social aspects of a job that requires sustained effort that can lead to an individual experiencing strain or stress (Bakker & Demerouti, 2007). In this study's context and aforementioned research, remote working can be indeed seen as demanding. This assumption is supported by literature. For instance, remote working is related to a phenomenon named 'Zoom Fatigue' which is caused by excessive usage of video conferencing tools (Fauville

et al., 2021). This excessive usage resulting in 'Zoom Fatigue' has been found to be significantly correlated to emotional and motivational exhaustion in employees (Fauville et al., 2021). This leads to the assumption that more remote working hours may result in higher levels of 'Zoom Fatigue', thus resulting in more emotional exhaustion. Additionally, employees felt psychologically depleted not only by the overuse of tools but also by the higher workload and having meetings that conflicted with their local time and energy levels that come with remote working (Johnson and Mabry, 2022). This sheds light on how remote working impacts exhaustion.

Remote working does not only negatively impact energy levels, but also levels of job engagement. For instance, employees have also indicated that online meetings were not beneficial to them, but attendance was mandatory (Karl et al., 2021). This lack of meaning in meetings can be seen to reduce an employee's job engagement (Bitsoli, 2022). Furthermore, research has found that remote working negatively relates to the job engagement of employees due to feeling more pressure to work, less social support and less feedback from colleagues (Gifford, 2022; Sardeshmukh et al., 2012).

In sum, literature shows that remote work can be viewed as demanding and can influence both heightened exhaustion and a reduction in job engagement. Therefore, this study predicts that a higher degree of remote working causes more remote work exhaustion and also results in lower job engagement.

H1a: Degree of remote working is positively related to remote work exhaustion.

H2a: Degree of remote working is negatively related to job engagement.

Factors Influencing Remote Work Exhaustion and Job Engagement

Although remote working is thought to cause remote work exhaustion and lower job engagement, not all remote workers are affected in the same way. To gain deeper insight into how remote working may have different consequences, this study will consider the roles that individual and environmental factors may play in the influence of remote working on both remote work exhaustion and job engagement.

Perceived Inclusion by Colleagues

Inclusion is defined as individuals from different identities feeling valued, welcomed, and that they belong within a group (Tprestianni, 2022). Inclusion in the workplace has been found to be related to both negative and positive outcomes for employees. A lack of inclusion can result in increased stress and decreased productivity, but high levels of inclusion can influence job satisfaction and heighten performance levels (Miminoshvili & Černe, 2022; Sahin et al., 2019). Remote working has been found to create barriers for inclusion in the workplace while also decreasing belonging (Jostle, 2022).

A better understanding of how remote working relates to inclusion can be explained further with the Social Identity Theory (SIT). SIT states that behaviour and communication between group members are dependent on the value one places on social group membership (Harwood, 2020). Remote working arrangements can potentially create challenges in terms of how much employees see themselves as part of their group, and whether they are included. For instance, remote workers have fewer opportunities than their counterparts to engage in social interactions and participate in various routines (Bartel et al., 2007).

The assumptions derived from the SIT have already been previously supported by findings. Studies show that remote workers have expressed concerns about remote work leaving them feeling isolated and excluded (Igbaria & McCloskey, 2003). These feelings of isolation and exclusion have been recently found to be positively correlated with emotional exhaustion (Anand & Mishra, 2021). Moreover, it has been reported that employees who are isolated and unsupported by their colleagues experience more escalated job demands (Dionisi et al., 2020). Consequently, this can result in work-related burnout and emotional exhaustion (Singh et al., 2022). Hence, the current study predicts that remote working is negatively related to perceptions of inclusion by colleagues. Furthermore, since inclusion is related to negative employee outcomes, the current study also expects that lower perceptions of inclusion are related to higher levels of remote work exhaustion (Sahin et al., 2019). As such, inclusion is expected to act as an explanation in terms of the relationship between the degree of remote work and remote work exhaustion.

H1b: The relationship between the degree of remote working and remote work

exhaustion is explained by perceptions of inclusion by colleagues.

Being part of a team is seen as a motivator to employees and can therefore boost one's job engagement and satisfaction (Costa et al., 2014). However, since employees may feel less inclusion if they work more remotely, it seems to follow that it may affect their job engagement. This is evident as reports relay that employees' sense of belonging, and job engagement plummeted due to a decrease in social interactions as a consequence of remote working (Golden, 2022; Bareket-Bojmel et al., 2023). In the current study, inclusion is expected to additionally explain the relationship between the degree of remote working and job engagement.

H2b: The relationship between the degree of remote working and job engagement is

explained by perceptions of inclusion by colleagues.

An Individual's Sociability

As highlighted in the previous section, it is anticipated that social processes, particularly perceived inclusion, play an important role in remote work exhaustion and job engagement. This is evident as being away from the workplace and feeling excluded by colleagues has been found to lead to emotional exhaustion and decreased job engagement in employees (Bratu, 2020; Reece, 2021). Another social process that is predicted to play a critical role in the current study is the sociability of an individual. Sociability refers to a tendency to associate with others and prefer to have company rather than being alone (Cheek & Buss, 1981). Naturally, when working remotely, there are fewer opportunities available for one to socialise with others. This has been found to be a potential problem for high-extraversion individuals who are more likely to be affected negatively by the new enforcement of remote work than introverted individuals who may not suffer from a lower level of daily interactions (Hi5, 2022).

This can be further explained with the JD-R model as one's job demands may be elevated due to reduced social support and exclusion as a result of an increase in hours spent working from home (Sardeshmukh et al., 2007). As mentioned, this may be more burdensome for those who thrive in an environment where there is a large amount of social interaction than those who do not, possibly creating a more negative environment for them. Employees who are

more sociable in nature may rely more heavily on resources such as social interaction to feel as though they belong, which is not readily available when remote working. Thus, they may experience remote work exhaustion more than low sociable colleagues. Conversely, they may also benefit more from inclusion by their colleagues than low sociable employees. This leads to the hypothesis of the current study which predicts that low perceptions of inclusion will have a stronger relationship with remote work exhaustion for highly sociable employees than for low sociable individuals.

> *H1c: The negative relationship between perceived inclusion by colleagues and remote work exhaustion is moderated by individual sociability, in that this relationship will be stronger for participants with high (vs. low) sociability.*

In terms of job engagement high-extraverted, and thus sociable, individuals became less productive, engaged, and satisfied with their jobs over time when not being able to socialise with coworkers due to remote working (Evans et al., 2022). Again, this can be further explained with the JD-R model as the resource of social interactions with colleagues that provides individuals with a sense of belonging is reduced (Waller, 2020). The reduction in the sense of inclusion is in result of the distance placed between coworkers as a result of working from home (Lal, et al., 2023).

Moreover, this physical separation can be seen as demanding for employees as it has been found to result in isolation which leads to job stress, ultimately causing job disengagement (Basit & Nauman, 2022; Kuntsman et al., 2022). Given that this separation is expected to affect highly sociable individuals more, the impact of inclusion by colleagues on the levels of job engagement may be more noticeable. As such, this study predicts that perceptions of inclusion will have a stronger relationship with job engagement for those with high sociability than those with low sociability.

> *H2c: The positive relationship between perceived inclusion by colleagues and job engagement is moderated by individual sociability, in that this relationship will be stronger for participants with high (vs. low) sociability.*

The Sociability of the Online Environment

Sociability of the online environment refers to the extent to which the online environment is perceived as being able to facilitate social interactions between friends, colleagues, family members, etc (Kreijns et al., 2007). There are a number of studies that have explored the interaction between the online environment and an individual's personal well-being. For example, the quality of video conferencing can aid in reducing videoconferencing fatigue (Chang, Hsu, and Chen, 2022; Cho and Lim, 2019; Wang et al., 2021). Cho and Lim (2019) also found that the quality of online real-time interaction positively helps viewers of online live broadcasts.

Sociability of the online environment can be seen to conform with the JD-R model as it highlights another element known as job resources (Bakker and Demerouti, 2007). Job resources, contrary to demands, are the aspects of a job that aid in the achievement of work goals, the reduction of demands and the fostering of personal growth (Bakker and Demerouti, 2007). Sociability of the online environment can be viewed as a resource as it is the platform given to workers that aids in the mitigation of feelings of loneliness and aids in employees feeling included by their colleagues (Shaw & Grant, 2002). It can also be considered a resource as it promotes emotional support, provides colleagues with comfort during difficult situations and also helps to boost coworkers' self-confidence (Reblin & Uchino, 2009; Stehr, 2023). Instrumental support is another aspect which is apparent in a fruitful online environment, employees tend to take on tasks for their fellow colleagues when they are able to communicate with one another effectively (Stehr, 2023). These constructs promoted by a highly sociable environment are closely related to inclusion (Morelli et al., 2015).

This study will aid in the understanding of the relationship between the degree of remote working, perceived inclusion by colleagues and the sociability of one's online environment. It predicts that a highly sociable online environment will buffer the negative relationship between a high degree of remote working and low perceptions of inclusion by colleagues.

> *H3: The negative relationship between the degree of remote working and perceived*
> *inclusion by colleagues is moderated by sociability of the online environment, in that this*

*relationship will be weaker for participants with a high (vs. low) sociability of the online
environment.*

The relationships which have been hypothesised in the current study are constructed and
visualised in the research models in Figure 1 and 2.

Figure 1

*Research Model Which Visualises the Hypotheses Involving the Relationship Between the
Degree of Remote working and Remote Work Exhaustion (H1a, H1b, H1c, H3)*

Sociability of Online Environment

Individual Sociability

Perceived Inclusion by Colleagues

+

+

-

-

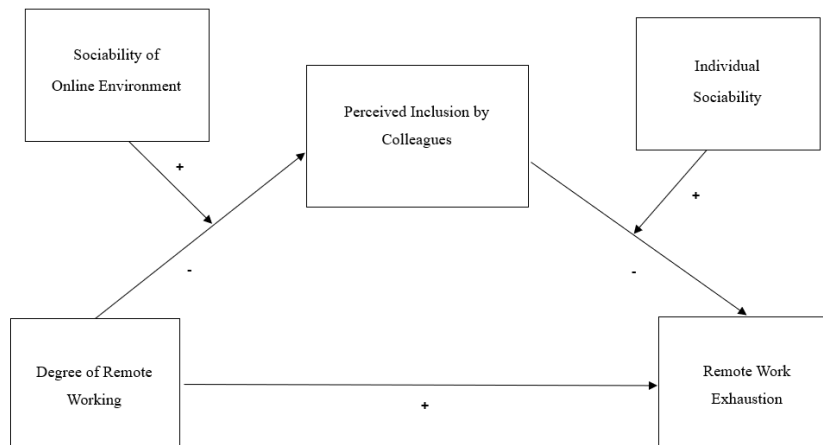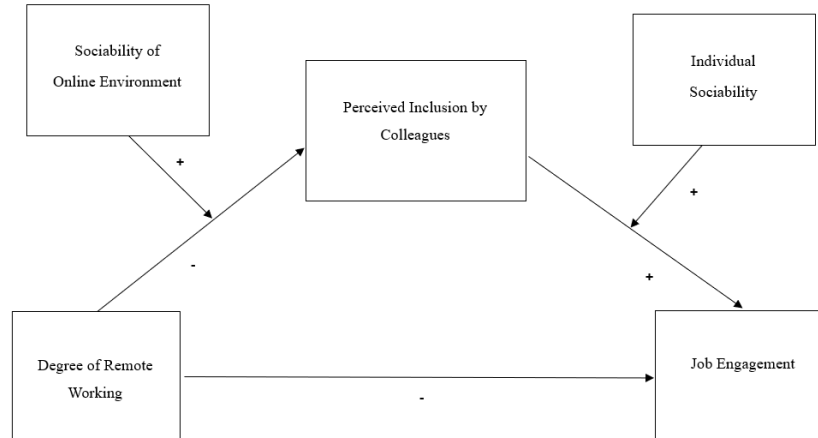Degree of Remote Working

Remote Work Exhaustion

+

Figure 2

*Research Model Which Visualises the Hypotheses Involving the Relationship Between the
Degree of Remote working and Job Engagement (H2a, H2b, H2c, H3)*

Sociability of Online Environment

Perceived Inclusion by Colleagues

Individual Sociability

+

+

-

+

Degree of Remote Working

Job Engagement

-

Methods

A quantitative approach was the research design chosen as it is appropriate for this study due to the major strength of inductive reasoning which will allow for reliable and factual outcome data that can be used for generalisation to greater populations (Casebeer & Verhoef, 1997). As the aim of this research is to investigate the relationship between the degree of remote working and remote work exhaustion/job engagement with the moderators of individual sociability, sociability of the online environment and the mediator of perceived inclusion by colleagues, quantitative data will be advantageous.

Participants

The intended sample size initially was 357 participants but, 330 participants were acquired (200 female, 125 were male, 4 non-binary and 1 preferred not to say). The inclusion criteria for this study were that participants must be at least 18 years old, work at least eight hours a week, work remotely at least 1% of their work hours, and interact with at least three colleagues on a weekly basis. This was required as the socialisation aspect of working is majorly investigated within this study. After excluding those who did not meet the criteria, 215 participants were included.

In the informed consent form, all participants were told before accepting the questionnaire that the survey is being used to investigate how being different in terms of personality can influence various employee well-being outcomes. They were then reminded that participation is voluntary and that not taking part or withdrawing will not result in penalisation. It was also made clear that all data given is not personally identifiable and cannot be traced, in addition to this, all data would be kept for the duration of ten years. It was also made clear that data may be shared with third parties and that it can be used for scientific publications (see Appendix A). Participants were then debriefed after completing the questionnaire.

Participants' average age was 29.40 (SD = 10.87). They worked an average of 40.09 (SD = 2.95) hours per week and an average of 37.48% of these hours were spent working remotely (SD = 39.94).

Design and Procedure

Data collection was carried out online by a group of four researchers with the use of Qualtrics where the data was also stored. Online data collection was chosen as it is easy to use for participants, more accurate and easier to analyse. Data collection began on the 1st of March and concluded on the 7th of April. The survey was distributed to acquaintances, friends, family and colleagues through internship workplaces, to friends and family and social media platforms such as Instagram. Participants were not required to have worked in any specific field to be able to take part in this study.

Ethical Approval

This study was granted ethical approval by FERB. This means that all research projects must be both stored and handled in accordance with Utrecht University Faculty's protocol for data collection and must be registered at Utrecht University Student Ethics (UU-SER) according to the GPDR.

Measures

There was a total of twelve questionnaires within the survey, however, six will be utilised for this study. These questionnaires measured the variables of sociability of the online environment, perceived inclusion by colleagues, individual sociability, degree of remote working,

job engagement, and remote work exhaustion (see Appendix B). Each questionnaire was distributed in English to participants.

Each scale, excluding the scale used to investigate the degree of remote working, required participants to respond using a 1 – 7 Likert scale, 1 being completely disagree and 7 being completely agree.

Degree of Remote Working

To measure the degree to which an individual spends their time remote working, a slider scale was given for the participants to use. The question was labelled: "What percentage of your working hours is spent working from home?". This question required subjects to use a slider that went from '0' being never to '100' being always.

Individual Sociability

The second questionnaire was used to indicate the degree of the subjects' sociability. This scale was derived from the Shyness and Sociability Scale which was used in Cheek and Buss' (1981) study which was based on the author's master's thesis on the relationship between shyness and sociability. The scale used in the current study was a slightly modified version of this as all of the shyness items were removed to only focus on sociability. It consisted of 4 items, two example items on this scale are: "I like to have people around me at work" and another which was reverse scored; "I usually prefer to do things alone". In this current study, the scale was found to be acceptable ($\alpha = .75$).

Remote Work Exhaustion

The third scale used for this study to investigate remote work exhaustion was the Moore Work Exhaustion Scale (2000), as modified by Parra et al. (2022) to study remote work exhaustion. This scale included five items, an example item being: "I feel burned out from working remotely". In this current study, the scale was found to be acceptable ($\alpha = .92$).

Job Engagement

The fourth scale was used to investigate the subjects' job engagement. This was measured using the Utrecht Work Engagement Scale which has been previously used to assess the levels of

pride, resilience, energy, concentration, inspiration, and sense of significance at work (Schaufeli et al., 2017). This scale was shortened in the current study to only utilise the items of most importance and to keep it concise. This scale entailed three items, an example of an item on this scale being: "I am enthusiastic about my job". In this current study, the scale was found to be acceptable (α = .74).

Sociability of the Online Environment

The fifth scale used for this study was the Technology Sociability Scale which was initially a sociability scale which was used for determining the perceived degree of sociability of self-reporting computer-supported collaborative learning environments. This scale was constructed and validated by Kreijns (et al., 2007). In the current study, it is being used to measure sociability of the online environment. This scale included six items, one example item on this scale was: "I do not feel lonely in our team messaging platforms". In this current study, the scale was found to be acceptable (α = .85).

Perceived Inclusion by Colleagues

The final scale used for this study was a shortened version of the Perceived Group Inclusion scale which was conceptualised by Jansen (et al., 2014) as a starting point to validate a scale which measures perceptions of inclusions in individuals. In the current study, this scale was used to measure inclusion by colleagues by utilising eight of sixteen items from the original study as the main focus is colleague inclusion. One example item of this scale is: "This team gives me the feeling that I fit in". In this current study, the scale was found to be acceptable (α = .91).

Analysis Plan

As mentioned, reliability tests using Cronbach's alpha also ran on each variable and results show that they were all reliable, thus no items needed to be deleted from the data set. The deletion of pairwise data was also carried out for all elements of the questionnaire.

First, the assumptions for regression analyses were checked. This was followed by correlation analyses to understand the relationships between variables. Subsequently, all hypotheses were tested using Hayes' model 21 in the PROCESS macro for SPSS (Hayes, 2017).

Model 21 included the degree of remote working being a predictor, sociability of the online

environment and individual sociability being moderators, perceived inclusion by colleagues

being a mediator and remote work exhaustion and job engagement being outcome variables.

Results

Values of skewness and kurtosis were computed to check assumptions for regression

models. The assumption of normality was met as all variables were found to have normal

distribution scores. There was also no visible evidence of nonlinear relationships, therefore the

assumption of linearity was also met.

The intercorrelations between the variables of the degree of remote working, remote

work exhaustion, individual sociability, sociability of the online environment, perceived

inclusion by colleagues and job engagement can be found in Table 1. There are eight significant

correlations found. The analysis shows that sociability of the online environment is negatively

related to remote work exhaustion ($p = .031$), meaning that individuals who perceive their online

environment as more sociable experience less remote work exhaustion. Perceived inclusion by

colleagues was found to be positively related to sociability of the online environment ($p < .001$),

meaning that individuals who perceived more inclusion when they had a more sociable online

environment. Moreover, job engagement was also positively related to sociability of the online

environment ($p = .004$), meaning that individuals who had higher levels of engagement had a

more sociable online environment.

The analysis also found that job engagement was positively related to individual

sociability ($p < .001$); this means that individuals with higher levels of job engagement had higher

levels of individual sociability. Sociability of the online environment was positively related to

the degree of remote working ($p = .043$), meaning that individuals who had more sociable online

environments worked remotely relatively often. Perceived inclusion by colleagues; was also

found to be positively related to individual sociability ($p < .001$); this means that individuals

perceived more inclusion if they were more sociable in nature. Perceived inclusion by colleagues

was also found to be positively related to the degree of remote working ($p = .035$), meaning that

individuals perceived more inclusion when they worked from home often. Finally, perceived

inclusion by colleagues was found to be positively related to job engagement ($p <.001$), meaning that individuals who perceived more inclusion had higher levels of job engagement.

Hypothesis Testing

Hayes' (2017) model 21 with 5000 bootstraps was utilised to test all hypotheses. Model 21 was run twice, once to test hypotheses 1a, 1b and 1c with a regression model with remote work exhaustion as the outcome ($R^2 = .04$, $F (4, 195) = 2.06$, $p = .088$) and once to test hypotheses 2a, 2b and 2c with the regression model with job engagement as the outcome ($R^2 = .25$, $F (4, 195) = 16.01$, $p < .001$). Both models included perceived inclusion, which was predicted by the degree of remote working, sociability of the online environment and their interaction (to test hypothesis 3) in both models ($R^2 = .18$, $F (3, 196) = 14.39$, $p < .001$). The path coefficients of all tested relationships can be found in Table 2.

Hypotheses 1a and 2a were tested by assessing the relationships between the degree of remote working and remote work exhaustion (1a, $p = .262$) and job engagement (1b, $p = .837$) in the regression models, which were not significant. As such, hypotheses 1a and 2a were rejected.

Table 1

Means, Number of Participants, Standard Deviations, and Correlations Between the Degree of Remote Working and the Variables

Variables	Mean	N	SD	1	2	3	4	5	6
1. Degree of Remote Working	37.48	215	28.39	-					
2. Individual Sociability	5.29	215	0.86	-.05	-				
3. Remote Work Exhaustion	2.99	215	1.50	-.13	.06	-			
4. Sociability of the Online Environment	4.77	200	1.14	.14*	.12	-.15*	-		

5. Job Engagement	5.01	215	1.04	.04	.23**	-.04	.20**	-
6. Perceived Inclusion by Colleagues	5.48	215	0.86	.14*	.33**	.41	.36**	.49**	-

Note: The number of participants for sociability of the online environment is different than for the other variables, since some participants did not fill out this scale.

*. Correlation is significant at the .05 level (2-tailed).

**. Correlation is significant at the .01 level (2-tailed).

Table 2

Unstandardized Regression Coefficients, Standard Errors, and Model Summary for Two Models with Remote Work Exhaustion and Job Engagement as Dependent Variables Using PROCESS with 5000 Bootstraps

| | Consequent | | | | | | | | | | | |
| | Perceived Inclusion by Colleagues* M | | | | Remote Work Exhaustion Y_1 | | | | Job Engagement Y_2 | | | |
Antecedent	*Coeff.*	*SE*	*p*	*95% CI*	*Coeff.*	*SE*	*p*	*95% CI*	*Coeff.*	*SE*	*p*	*95% CI*
X (Degree of Remote Working)	- 0.02	0.01	.005	0.01, 0.04	-0.00	0.00	.262	-0.01, 0.00	-0.00	0.00	.827	-0.01, 0.00
W (Sociability of the Online Environment)	0.42	0.08	< .001	0.26, 0.57								
Z (Individual Sociability)					-1.50	1.13	.184	-3.73, 0.72	0.68	0.72	.342	-0.73, 2.10

M (Perceived Inclusion by colleagues)					-1.85	1.05	.081	-3.93, 0.23	1.07	0.67	.110	-0.25, 2.39
$X * W$	-0.00	0.00	.002	-0.01, -0.00								
$X * Z$	-0.33	0.21	.114	-0.08, 0.73								
Conditional Indirect effect of X on Y, at mean value of W and Z					0.00	0.00		0.00, 0.00	0.00	0.00		0.00, 0.00
	$R^2 = 0.18$					$R^2 = 0.04$				$R^2 = 0.25$		

Hypotheses 1b and 2b were tested by assessing the indirect relationship between the degree of remote working and remote work exhaustion (1b) and between the degree of remote working and job engagement (2b), via perceived inclusion (1b and 2b). The degree of remote working was positively related to perceived inclusion ($b = 0.02$, $p = .005$), meaning that employees who worked remotely relatively more often perceived more inclusion. However, perceived inclusion was not related to remote work exhaustion ($b = -1.85$, $p = .081$) and job engagement ($b = 1.07$, $p = .110$). The tests of the indirect relationships indeed showed no evidence for indirect relationships (in both cases $b = 0.00$; 95% CI = 0.00;0.00), contrary to the hypotheses.

Hypotheses 1c and 2c, regarding the moderation of individual sociability on the relationship between inclusion and remote work exhaustion (1c) and between inclusion and job engagement (2c) were tested by examining the moderation effects of the model. Individual sociability did not moderate the relationships between perceived inclusion and remote work exhaustion ($b = 0.33$, $p = .114$) or job engagement ($b = -0.10$, $p = .450$), contrary to the hypotheses.

Finally, hypothesis 3 regarding the moderation of sociability of the online environment on the relationship between the degree of remote working and inclusion was tested. Sociability of the online environment was found to have a small negative moderating effect between degree of remote working and perceived inclusion $(b = -0.00$, $p = .015)$. The degree of remote working was found to positively relate to inclusion in a low sociable online environment (-1SD, $b = 0.01$, $p = .003$), but no relationship was found in an average ($b = 0.00$, $p = .079$) or in a highly sociable online environment (+1SD, $b = 0.0$, $p = .659$), thus not supporting the hypothesis. For a graphic representation of all results, see Figure 3.

Table 3

Moderation Effect of Sociability of the Online Environment (SOE) on the Relationship Between the Degree of Remote Working and Perceived Inclusion by Colleagues

Sociability of the online environment (SOE)	*b*	*SE*	*p*	*Lower border 95% CI*	*Upper border 95% CI*
SOE -1 SD	0.01	0.00	.003	-0.00	0.00
Mean SOE	0.00	0.00	.079	-0.00	0.00
SOE +1 SD	-0.00	-0.00	.659	-0.00	0.00

Table 4

Moderation Effect of Individual Sociability (IS) on the Relationship Between the Degree of Remote Working and Remote Work Exhaustion and the Degree of Remote Working and Job Engagement

Individual Sociability (IS)	*b*	*SE*	*Lower border 95% CI*	*Upper border 95% CI*
IS -1 SD	0.00	0.00	-0.00	0.00
Mean IS	0.00	0.00	-0.00	0.00
IS +1 SD	-0.00	0.00	-0.00	0.00

Figure 3

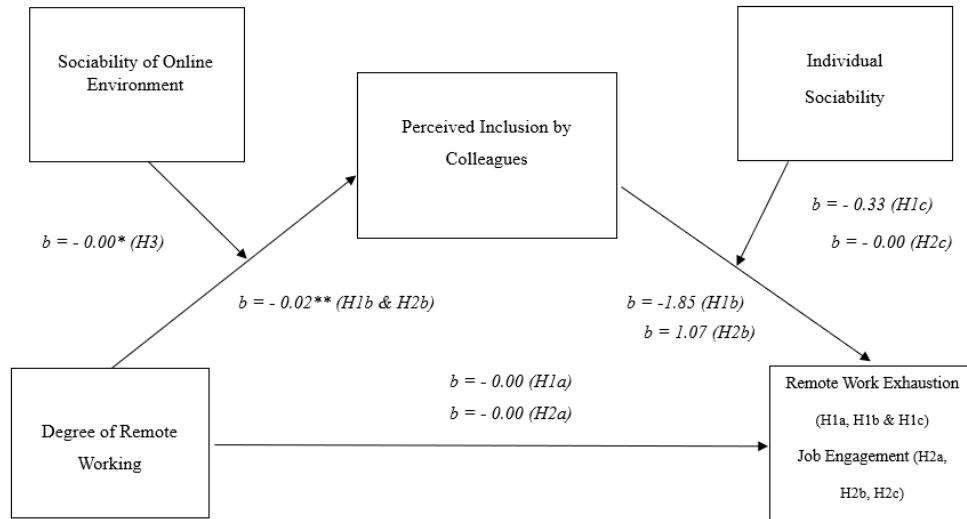*Research Model Which Includes an Overview of Results (H = Hypothesis)*

Box	Content

Sociability of Online Environment

Perceived Inclusion by Colleagues

Individual Sociability

$b = -0.33$ (H1c)
$b = -0.00$ (H2c)

$b = -0.00*$ (H3)

$b = -0.02**$ (H1b & H2b)

$b = -1.85$ (H1b)
$b = 1.07$ (H2b)

$b = -0.00$ (H1a)
$b = -0.00$ (H2a)

Degree of Remote Working

Remote Work Exhaustion
(H1a, H1b & H1c)
Job Engagement (H2a, H2b, H2c)

*Note: * p < .050, ** p < .010, *** p < .001*

Discussion

As the popularity of working remotely has escalated over the last few years, there has been a growing need to explore the effects it may have on employees. Fundamentally, this thesis focused on how remote working relates to a new phenomenon, namely remote work exhaustion. The overall purpose of this study was to extend prior research by conducting a more thorough investigation on the relationship between the degree of remote working and remote work exhaustion, by considering the role of individual sociability and sociability of the online environment as moderators and perceived inclusion by colleagues as a mediator. Moreover, this paper also investigated the relationship between the degree of remote working and job engagement

as perhaps, in certain conditions, remote work can be viewed as a hinderance to employees' job engagement.

Unexpectedly, as the results show above, none of the hypotheses were supported that were investigated in this study. A theoretical perspective of the potential reasonings for why no hypotheses were supported will be further discussed. However, this study is still informative for future research as it displays how differences in measures or participants between the current study and previous studies may result in contradicting findings.

Based on previous research, hypothesis 1a predicted that the degree of remote working would be positively related to remote work exhaustion. However, the results showed that individuals who spend relatively more hours working from home did not experience more remote work exhaustion. These findings seem to be contradictory with the previously discussed TinyPulse (2021) survey, which finds that 100% remote employees experience the highest levels of employee exhaustion at 85.65% when compared to hybrid and in-person employees (24%). The contradictions in findings can be explained by the differences in participants and measures which are used in the survey.

In the TinyPulse survey, there were 769 responses from only Human Resources employees and those in leadership positions within their organisation. The majority of these participants were also reported to work in industries such as computer & technology, finance and insurance and professional services. Focusing on these sectors may have allowed for more significant findings in the current study as they are considered work from home friendly (Haan, 2023). Moreover, having participants in these work from home friendly sectors perhaps enabled the study to have more 100% remote workers. Thus, making it possible for a better understanding of how remote working impacts employees and perhaps enabling the hypothesis to be supported. The current study also only used the data of 215 participants who were mostly hybrid employees that worked remotely an average of 37.48% of their work hours. TinyPulse's survey also compared levels of employee exhaustion between 100% remote, hybrid and in person employees to find which group experienced the most exhaustion. This was not done in the current study especially due to the fact that only 2 of 215 participants worked remote 100% of the time and the rest were hybrid workers. Differences in results between the studies could be

because the majority of participants in the current study were hybrid workers while fully remote workers, who may experience more remote work exhaustion, are not represented. In all, participants being majorly hybrid workers can explain why there was no relationship found between the degree of remote working and remote work exhaustion.

Hypothesis 2a predicted that the degree of remote working would be negatively related to job engagement. However, this hypothesis was also not supported. Furthermore, hypotheses 1c and 2c which predicted that individual sociability would moderate the relationship between perceived inclusion by colleagues and remote work exhaustion (1c), and perceived inclusion by colleagues and job engagement (2c) were not supported by findings. The lack of support for hypotheses 1a, 2a, 1c and 2c can be explained by the potential misspecification of remote working regarding the JD-R model. A higher degree of remote working is viewed as a demand in the current study as it results in lower levels of job engagement due to increased pressure to work and a lack of significance in their online meetings (Gifford, 2022; Karl et al., 2021). Additionally, remote working was also considered as more demanding for those with high sociability in the current study. This is because remote working has been found to relate to more feelings of isolation for those with high sociability which leads to a diminished sense of belonging as a result to lower levels of social interaction (Kuntsman et al., 2022). This ultimately resulting in them experiencing strain, exhaustion, and less engagement than low sociable individuals.

Despite the current study discussing remote working as a demand, it can be also viewed as a resource. However, the current study does not shed light on the resourceful aspects of remote working which can possibly explain a discrepancy between predictions and results. Remote working can be seen as a resource as autonomy and self-efficacy are promoted by the practice and are found to increase well-being, other health-related outcomes, and job satisfaction in employees (Lange & Kayser, 2022; Karanikas & Cauchi, 2020). These resources may serve as potential buffers against the demands of remote working. In other words, perhaps employees do find more remote work to be demanding in terms of their decreased contact with colleagues and exhaustion, but the resources that remote work affords may counterbalance these negative consequences. In order to substantiate this possibility, more research that includes both possible demands and resources of remote work is needed.

While the degree of remote working was found to be positively related to perceived inclusion by colleagues, it was not found to relate to remote work exhaustion or job engagement. Therefore, hypotheses 1b and 2b which predicted that perceived inclusion by colleagues would mediate the relationship between the degree of remote working and remote work exhaustion (1b), and the relationship between the degree of remote working and job engagement (2b) were not supported by findings. The Social Identification Theory (SIT) could explain why the degree of remote working was found to be positively related to perceived inclusion by colleagues. This could be because according to SIT, identification with other individuals is important (Harwood, 2020). Perhaps identification with colleagues is easier when remote working as visible characteristics (age, gender, race) are less salient on account of their being less discrimination based on these characteristics (Sharma, 2023).

The inconsistency between predictions of hypotheses 1b and 2b and findings could be further explained by the fact that the majority of participants being hybrid workers. Employees may fulfil their need to socialise by being in the office those few times that they are per week and perhaps employees value these interactions more. Thus, their level of perceptions of inclusion at work did not impact or diminish their levels of exhaustion or engagement. Furthermore, perhaps individual sociability did not moderate the relationships between perceived inclusion by colleagues and remote work exhaustion/job engagement due to inclusion not being the right variable used to investigate differences between high and low sociable individuals. Being sociable may be more related to the quality and quantity of social interactions rather than feeling included. Previous studies considered different variables than inclusion, such as social isolation (Ali et al., 2022).

Finally, hypothesis 3 which predicted that the relationship between the degree of remote working and perceived inclusion by colleagues is moderated by the sociability of the online environment was not supported by results. However, results show that degree of remote working was found to be positively related to perceived inclusion if participants have a low sociable environment while there was no relationship if they perceived more sociable online environments. This could be due to employees experiencing 'Zoom Fatigue' (Fauville et al., 2021). It could also be that if organisations have more sociable online environments, employers are pressuring their employees to use such online tools for communication, regardless of their

preference of wanting to work alone or with others. This could lead to further discouragement of using these tools to effectively communicate with coworkers, thus stagnating an increase in levels of inclusion.

Another reason why the hypothesis was not supported can be because sociability of the online environment is not a critical resource, regarding the JD-R model, for perceived inclusion. This again could be because the majority of participants were hybrid workers and interacting with colleagues in the office is more resourceful and of more value to employees. Thus, having the opportunity to socialise with coworkers in-office a number of times per week is enough and there is nothing added or taken away by having a sociable online environment. However, perhaps sociability of the online environment could improve inclusion if an employee remote works 100% of the time because it might be that sociability of the online environment is more important if this opportunity of meeting coworkers in-office is not there for employees. Thus, it could possibly result in finding a moderation of sociability of the online environment between the relationship of the degree of remote working and perceived inclusion by colleagues being significant. In all, more research is needed surrounding this topic.

Implications for Future Research

Although this study cannot offer many practical implications for organisations other than ensuring that employees continuously have the opportunity to work in an office in order to socialise with co-workers, there are various research implications that can be provided. First, for future research, exploring different variables may be more beneficial. As findings show above, the degree of remote working does not have a relationship between experiencing remote work exhaustion, so, instead of using remote work exhaustion as an outcome variable, another variable such as psychological well-being could be investigated (Şentürk et al., 2021). In the current study using remote work exhaustion only allowed for the inclusion of participants that worked remotely. So, a more general exhaustion scale for a variable like psychological well-being could also include participants that do not work remotely. This would make it possible for comparisons to be made between remote worker and office worker groups.

Moreover, if future research wants to remain investigating remote work exhaustion, family life and salary satisfaction are variables that should be utilised to moderate its relationship

with the degree of remote working. These are variables that have been majorly found to moderate employees' outcomes (Zhu et al., 2022; Llorca-Pellicer et al., 2021) and can be investigated in terms of whether or not they cause employees to experience more or less remote work exhaustion. Regarding mediation, the variable of perceived inclusion by colleagues was not found to explain the relationship between the degree of remote working and remote work exhaustion/job engagement. As mentioned, loneliness is a reoccurring variable when discussing remote working and perhaps using loneliness as a mediator instead may aid in predicting remote work exhaustion.

Another implication of future research is to utilise the JR-R model but to not view the degree of remote working as only a demand. Instead, it can be simultaneously viewed as both a demand and a resource for employees. This can be done with the addition of other variables such as autonomy to the current study. As discussed previously, remote working could be seen as both a resource and a demand as although it causes individuals to feel isolated and can negatively impact productivity, it reduces the strain of having to work in an office due to higher levels of autonomy thus lowering levels of office work burnout (Catalyst, 2021; Lange & Kayser, 2022). So, it may be more beneficial to also investigate the more positive side of working from home when carrying out future research. It also would be interesting to find out whether the resources and demands will cancel each other out, so the net relationship with outcomes are 0 or non-significant.

Moreover, more research is needed on how individual factors may relate to the effects of remote working. Perhaps it would help to incorporate the likes of the big five personality traits when investigating predictors of remote exhaustion. The trait of neuroticism could be used as it was found to be the main predictor of remote work exhaustion in the Parra et al., (2022) study. Agreeableness and openness could also be incorporated as they were found in their paper to be protective personality traits against remote work exhaustion.

Strengths and Limitations of the Current Study

There are various strengths of the current study, the first strength being that it investigates the new phenomenon of remote work exhaustion which has previously only been labelled as such by researchers Parra, Gupta and Cadden (2022). This investigation was done with the

addition of variables which enabled the ability to explore more circumstances in which an employee could experience remote work exhaustion. Moreover, although there was no support for hypotheses of the current study, another strength of this study is that it has filled a gap in literature by the consideration of moderators and a mediator to explain how remote working could influence either remote work exhaustion or job engagement. This means that for future exploration, researchers do not need to focus on the relationship between these variables and they can make sure to focus on different predictors of remote work exhaustion.

Despite the fact that this study has various strengths, it also has a few limitations which need to be discussed. The first limitation could be that a large number of participants were found to have worked from home 0% of the time which resulted in the removal of 167 participants and decreased the sample size vastly. This may have resulted in an underpowered analysis and low statistical power. This also makes it harder to generalise findings as it cannot be used as a good representation for those who may actually experience remote work exhaustion due to working from home for a large amount of time. Another limitation that is visible in this study is that remote working was operationalised as only a percentage. The number of hours spent remote working in comparison to the overall number of hours they work a week was not taken into account which may have made a significant difference in the findings. A final limitation of this study is that the participants of this study were mostly those who are younger. Perhaps these participants are more used to remote working than those who are older and may be more accustomed to the traditional way of working in office. Moreover, having more participants from a younger age group may have been why there was no evidence of remote work exhaustion.

Conclusion

Remote working has become a growing practice in many sectors globally since the occurrence of the COVID-19 pandemic. This has resulted in employees increasing amounts of time working from home than in office. This led to the prediction that the degree of remote working would have a positive relationship with remote work exhaustion and a negative relationship with job engagement. Variables such as individual sociability, sociability of the online environment and perceived inclusion by colleagues were used to further explore these predicted relations. However, findings show that none of the hypotheses of the current study

were supported. This may cause one to conclude that remote working, at least not 100% of the
time, is not found to be exhausting by employees or found to relate to lower levels of job
engagement. This leads to suggestions that future research should delve into different variables
to investigate the effects of remote working. It is also advised that future research should
consider remote working as both a demand and a resource simultaneously and perhaps further
focus on the big five personality traits.

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Appendix A

Informed consent

Thank you for your interest in this study. Below is a description of the research procedures and an explanation of your rights as a research participant. In accordance with the ethics code of the American Psychological Association (APA), you are asked to read this information carefully. Please note that this study is intended for people who work at least 8 hours a week and interact with at least 3 colleagues on a weekly basis

The purpose of this research is to investigate the role of personality in the workplace. We are interested in investigating how being different from others in terms of personality, specifically extraversion, influences different employee well-being outcomes. Therefore, we will ask you questions about your personality and well-being. Finally, as nowadays a lot of people work remotely, we will also investigate how this affects employees and thus ask some questions related to this topic.

There are no known conflicts of interest in the conducting of this research study. There are also no known or anticipated risks associated with participation in this study.

Participation is entirely voluntary. Not taking part or withdrawing after the study has begun will not penalize your standing on this platform in any way. You have the right to skip or not answer any questions you prefer not to answer.

Your participation in this study will take approximately 7 minutes of your time.

With regard to the use of your study data, the following conditions apply:

- All data collected, up until the moment you discontinue participation or the experiment has ended, will be used for scientific purposes.
- Your data itself cannot be traced back to you, it is not personally identifiable.

- Your data will be stored safely for at least 10 years.

- Researchers can use the collected data for scientific publications.

The data might be shared with third parties.

If you have any questions, remarks and/or complaints about the study, you can email one of the researchers, Júlia Forcada via j.forcadaalmario@students.uu.nl or their supervisor, Onur Şahin, via o.sahin@uu.nl.

For official complaints, you can contact an independent contact person: klachtenfunctionaris-fetcsocwet@uu.nl.

Tara Marks, Mitush Gera, Carlijn Van Den Bos and Júlia Forcada

By clicking on the "yes" button below you indicate that: you work at least 8 hours a week and interact with at least 3 colleagues on a weekly basis. You have read and understood all information provided here, and you consent to participate in this study.

Debriefing Form

Thank you for participating in this study! You completed the study. Thank you for your participation! We hope you enjoyed the experience. To give you a sense of the study's purposes, we will provide you with some background information here. Please feel free to ask any questions or to comment on any aspect of the study. The general purpose of the study was to investigate whether being different in terms of extraversion from most other colleagues is related to burnout symptoms and to employees' sense of belonging in the team, among others. Furthermore, we are interested in how working remotely affects the well-being of employees. As you know, your participation in this study is voluntary. All data collected will be used for research purposes only. If you have any questions, please e-mail Júlia Forcada, j.forcadaalmario@students.uu.nl or Onur Şahin, o.sahin@uu.nl.

Appendix B

Questionnaire

General information

How old are you?

How many hours per week do you work?

Which percentage of your time do you spend working from home?

What is your gender?

Individual Sociability

(Shyness and Sociability Scale slightly modified to fit study, will focus only on sociability)

(Cheek & Buss, 1981; Asendorpf & Wilpers, 1998). (edit: I removed 2 items with lowest factor loadings in the original article).

1. I like to have people around me at work.
2. I usually prefer to do things alone (-)
3. I really like to talk to colleagues at work.
4. I welcome the opportunity to socially mix with colleagues.

Remote Work Exhaustion

(Modified from Moore Work Exhaustion Scale, 2000 by Parra, Gupta & Cadden, 2022)

1. Working remotely is emotionally draining.
2. Working remotely makes me feel used up at the end of the workday.
3. I feel fatigued when I get up in the morning and have to face another day working remotely.
4. I feel burned out by working remotely.
5. Working remotely all day is a strain for me.

Job Engagement

(Schaufeli, W. B., Shimazu, A., Hakanen, J., Salanova, M., & De Witte, H. (2017). An ultra-short measure for work engagement. *European Journal of Psychological Assessment*).

1. At my work, I feel bursting with energy.

2. I am enthusiastic about my job.

3. I am immersed in my work.

Sociability of the Online Environment

(Kreijns, K., Kirschner, P. A., Jochems, W., & Van Buuren, H. (2007). Measuring perceived sociability of computer-supported collaborative learning environments. *Computers & Education*, *49*(2), 176-192.)

1. Our team messaging platform enables me to develop good work relationships with my teammates.

2. Our team messaging platform enables me to get a good impression of my teammates.

3. I do not feel lonely in our team messaging platform.

4. I feel comfortable with our team messaging platform.

5. Our team messaging platform enables me to make close friendships with my teammates.

6. Our team messaging platform enables me to easily contact my teammates.

Perceived Inclusion by Colleagues

(Perceived Group Inclusion Scale, shortened version which excludes the questions related to authenticity) (Jansen et al., 2014).

Please indicate to what degree you agree with the statements below:

1. This team gives me the feeling that I belong.

2. This team gives me the feeling that I fit in.

3. This team likes me.

4. This team is pleased with me.

5. This team allows be to be authentic.

6. This team allows me to present myself the way I am.

7. This team encourages me to express my authentic self.

8. This team encourages me to present myself the way I am.

* *Team* is a replacement of *group*