

Women Working From Home: Higher Performance and Satisfaction or More Stress?

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Abstract: As a result of the COVID-19 pandemic, many companies and organisations have introduced or expanded remote work options, thus creating new opportunities for employees to organise their day-to-day work independently. However, several studies suggest that women tend to suffer more from the double burden, as working from home often leads to a revival of traditional gender roles. Special strategies and instruments are needed to optimise the work-life balance when working from home. The aim of this study was to identify gender-specific stress and success factors for remote work design in order to derive practical recommendations for companies, women and politics to optimise work performance, work-life balance and satisfaction in remote work. To reach this objective, an online survey in Germany (n = 247) examined the perceived work design competencies, individual agreements with managers, corporate culture, perceived collegial support and the relationship with colleagues. The respective influence of these variables on the perceived satisfaction, stress as well as work performance when working from home was examined. Using a multiple regression analysis, it was shown that the three factors workplace design competencies, individual agreements with managers and the relationship with colleagues have a significant influence on all of the examined dependent variables. This means that a strong manifestation of factors has an effect on higher satisfaction, better performance and lower level of perceived stress. Work design competence has the most significant influence on study participants here. Significant gender differences were also identified: on average, women report a higher level of satisfaction and a lower level of perceived stress. Based on the identified factors, the paper discusses specific recommendations for companies, women and politicians to help employees working from home cope better with the associated burdens.

Keywords: Working from home, Gender-specific strain, Job satisfaction, Stress perception, Job performance

1. Introduction

The COVID-19 pandemic has significantly accelerated the digital transformation and flexibilisation of work and made remote work popular (Galanti et al., 2021), whereby the effects on male and female employees differ greatly due to the unequal division of tasks in the professional and private environment and the differing representation in the various sectors (DGB, 2021). In connection with the increasing introduction of remote work and the simultaneous social distancing measures, various studies were able to detect gender-specific changes in working hours. Women are disproportionately represented in those sectors that saw a higher employment decline due to the pandemic (Madgavkar et al., 2020). In addition, after the closure of day-care centres and schools, mothers more often reduced their working hours in favour of childcare, and the gender gap in working hours increased by 20–50% (Collins et al. 2021). At the same time, there was an increase in unpaid work for women (UN Women, 2020), with employees with additional burdens being not only less productive, but also more often working outside regular working hours (Fraunhofer IAO, 2020), so that the boundaries between work and leisure are blurred (Atlassian, 2020).

Contrary to the aforementioned negative effects on working hours and the performance of female professionals working from home, various studies before the COVID-19 pandemic reported that working from home was associated with greater satisfaction (Binder, 2016; Wheatley, 2017; Reuschke, 2019). However, Binder (2016) found this effect only in men and not in women. Employees' productivity, commitment and work performance, too, increase when they work from home (Vyas and Butakhieo, 2021; Delanoeije and Verbruggen, 2020). Remote work can also improve flexibility, job satisfaction, work-life balance (Grant et al., 2019) and reduce stress (KKH, 2022). However, these positive effects only occur under certain conditions (DGB, 2021).

Overall, the studies often do not differentiate by gender. Where gender-specific evaluations are carried out, there is usually a deterioration in the work-life balance and a higher burden on women. Many studies focus on

describing the situation and less on investigating conditions and relationships of different influencing variables and their effects systematically. There is a research gap here so far.

Therefore, the *aim of the present study* was to identify empirical relationships between different influencing factors and to enable a systematic comparison between genders with regard to specific stress and success factors. To this end, the following research questions were formulated:

- *RQ1*: Do men's and women's satisfaction, performance and stress perception in remote work differ?
- *RQ2*: What are general stress and success factors in remote work and are they gender-specific?

To answer the research questions, a questionnaire on the above factors in remote work was developed and evaluated.

The paper is structured as follows: after presenting the theoretical framework and developing the hypotheses, we describe the methodology and results. The paper concludes with a discussion of the results, recommendations for action for companies and an outlook.

2. Theoretical Framework and Hypothesis Development

Bakker and Demerouti's (2007, 2014) "Job Demands-Resources Model" was used as a theoretical framework to narrow down the relevant factors. According to the model, both the requirements of work and general stress, as well as job and personal resources and individual qualities (e.g., skills and attitudes) have an influence on short-term and long-term stress effects such as employees' health and well-being. Requirements will only have a negative impact if there are not enough resources available to cope with their increase.

Therefore, we examine the "workplace design competence," "remote leadership," "perceived social support" and "quality of team collaboration" as possible resources when switching to remote work. Performance, satisfaction and the individual perception of stress are used as impacts.

2.1 Workplace Design Competence

Dettmers and Clauß (2018) define work design competencies as "*the knowledge about the favourable design of working conditions that enables a person to effectively cope with their own work tasks, at the same time promoting motivation and reducing burdens. The competence is based on experience and includes skills and strategies for how one's own work can be designed in the context of the specific framework conditions. Finally, work design competence includes knowledge about the leeway that employees have in their work situation.*" (p. 17, translated by the authors). Work design competence thus includes the active design of the workplace, which should have advantages especially when transitioning to remote work. The introduction of remote work showed significantly more positive developments for those with a high degree of work design competence (Dettmers and Mülders, 2020). The active design of one's own workplace also has a positive effect on working from home. In studies conducted during the COVID-19 pandemic, 92% of people who used job-crafting said their satisfaction had improved while working from home. In addition, 67% reported an improvement in team collaboration and 77% reported an improvement in productivity (Laker et al., 2020).

Therefore, we suspect a positive effect of workplace design competence in remote work on performance, satisfaction and a negative effect on stress perception (*H1*).

2.2 Remote Leadership

Remote leadership is the mutual influence between managers and their employees without any personal contact and predominantly through electronic media (Franken, 2022). Overall, leadership that supports employees has a positive impact on work performance (Borgmann et al., 2016). When working from home, remote leadership is the only way that management can support employees so that they can provide a resource for coping with increased requirements.

Therefore, we suspect a positive effect of remote leadership in remote work on performance, satisfaction and a negative effect on stress perception (*H2*).

2.3 Perceived Social Support From the Partner

The unequal allocation of household chores is connected to relationship conflicts, reduced satisfaction and a deterioration of professional performance. Furthermore, there are indications that the unequal allocation can lead to higher stress and a fragmentation of paid work and leisure time (Daminger, 2019; Schieman et al., 2018). Women assume a larger share of household chores, even if they are formally employed at the same

time. In addition, the allocation of chores within a household is associated with a reduction in working hours and a higher probability of women leaving employment (Zamaro and Prados, 2021). Furthermore, it is more likely for women to be dissatisfied with the allocation of household chores (Kluwer et al., 1996).

Therefore, we suspect a positive effect of social support by the partner in remote work on performance, satisfaction and a negative effect on stress perception (*H3*).

2.4 Quality of Team Collaboration

A team or work group can be defined as a special group whose purpose it is to render work together or in a coordinated division of labour (Greif, 2021). Studies on the supportive effects of teamwork showed the positive effect on work performance (Abdolshah et al., 2018), satisfaction (Hargadon and Bechky, 2006) and corporate performance (Cizmaş et al., 2020).

Therefore, we suspect a positive effect of team collaboration in remote work on performance, satisfaction and a negative effect on stress perception (*H4*).

3. Study Design

3.1 Implementation and Sampling

In order to investigate the hypotheses, a quantitative online survey was conducted in Germany during the survey period from 8 December 2021 to 17 March 2022. With regard to the survey period, it should be noted that it coincided with a new wave of infections with the contagious Omicron variant, accompanied by harsher COVID-19 restrictions in Germany, with day-care centres and schools remaining open, however. A filter question ensured that data were only collected from people who currently worked from home or had regularly worked from home within the preceding two years since the outbreak of the pandemic.

The questionnaire was distributed to students and company contacts of the working group by e-mail and via social media.

The final data set consisted of 247 study participants, 74.1% of whom were female and 25.9% male, with ages ranging from 19 to 71 ($M = 36.04$, $SD = 9.893$). In terms of status, the largest group was non-executive employees with 63.6%, followed by executive employees with 16.6%. The remaining 19.8% were divided into the groups "students," "managing directors" and "others." 72.9% of participants worked from home for three to six days a week. Considering the survey period, this is not surprising, as a lockdown was in place in Germany at that time and employees were asked to work from home (Bundesgesundheitsministerium, 2021).

3.2 Operationalisation of Variables

The items were measured on a six-level Likert scale from "do not agree at all" (1) to "fully agree" (6).

In order to examine the effects of a person's ability to design their own work, Dettmers and Clauß's concept of *work design competencies* (2018) was used. The full scale originally comprises 11 items, with planning competence measured with five items and self-motivation and stress avoidance competence measured with three items each. For our own questionnaire, we reduced the scale to nine items and omitted two items in planning competence. Due to this change, Cronbach's alpha was recalculated, which was in the good range with $\alpha = .865$ (Taber, 2018).

The survey section *Remote leadership* includes statements that relate to agreements made in remote work ($\alpha = .836$). This includes agreeing on objectives and expectations with the manager, the perceived support from the manager and whether there is a regular exchange on successes and tasks within the team.

In the *Collaboration and exchange* section, questions were asked about the collaboration with colleagues, the communication media used, the perceived collegial support and the relationships with colleagues ($\alpha = .703$).

In order to measure the effects of working from home, satisfaction, performance and stress perception in remote work were recorded as target variables.

In terms of *performance*, one of the questions was how participants assessed their performance working from home compared to working in the office and whether they could effectively carry out their tasks and projects working from home ($\alpha = .639$).

To measure *satisfaction* working from home, the scale of the German version of the Life Satisfaction Scale by Janke and Glöckner-Rist (2014) was adapted to the situation in remote work, containing a total of five items ($\alpha = .884$).

Finally, *stress perception* in remote work was investigated through questions about the perception of stress in general and with regard to remote work as well as questions on various stress factors ($\alpha = .806$).

4. Results

4.1 Gender-Specific Differences and Influencing Factors in Remote Work

In order to measure the differences between genders in the relevant factors performance, satisfaction and stress perception (RQ1), a MANOVA with the factor parenthood as a covariate was performed. Prior to performing the MANOVA, the Pearson correlations between the dependent variables were calculated and an average correlation was found between all dependent variables, suggesting the appropriateness of a MANOVA.

Since the groups were different in size (females: $n = 174$, males: $n = 63$), but homogeneity of the covariance matrices was given ($F(6, 85736.241) = .1241$; $p = .282$), Pillai's trace was selected as the test. On average, female participants reported a higher level of satisfaction, performance and less perceived stress working from home compared to male participants (cf. Table 1), but there was no significant influence of the variable "gender" on the dependent variables $V = .024$, $F(3, 232) = 1.934$, $p = 0.125$. In contrast, separate univariate tests for the dependent variables showed a significant effect of the gender on performance $F(1, 243) = 4.59$, $p = .033$.

Table 1: Means and Standard Deviations of Dependent Variables

	Performance		Satisfaction		Stress perception	
	f	m	f	m	f	m
Mean value	4.22	3.95	4.41	4.22	2.96	3.08
Standard dev	0.80	0.88	1.03	1.15	0.92	0.98
N	174	63	174	63	174	63

Note: f = female, m = male.

Regarding the difference between parents and people without children the covariate parenthood shows no significant influence $V = .025$, $F(3, 241) = 2.08$, $p = .104$. However, parents generally report higher performance, satisfaction and stress perception (cf. Table 2) with females reporting higher performance, satisfaction and a lower level of perceived stress than males.

Table 2: Means and Standard Deviations of Dependent Variables Among Parents and People Without Children

	Performance				Satisfaction				Stress perception			
	f	f*	m	m*	f	f*	m	m*	f	f*	m	m*
Mean value	3.95	4.22	3.9	4.10	4.42	4.56	4.21	4.30	3.08	2.96	2.92	3.16
Standard dev	0.88	0.80	0.89	0.78	1.15	1.03	1.19	0.97	0.98	0.92	1.07	0.87
N	114	60	24	38	114	60	24	38	114	60	24	38

Note: f* = female with children, m* = male with children.

4.2 Influencing Factors for Successful Remote Work

In order to investigate the influence of the factors work design competence, remote leadership and team collaboration on the dependent variables (RQ2), three regression models were established and checked with

separate data sets for females and males. Team collaboration was the only variable that was not significant in any of the models and was excluded with H4.

The estimation results are presented in Table 3:

Table 3: Estimation Results

	Model 1: Performance		Model 2: Satisfaction		Model 3: Stress perception	
	f	m	f	m	f	m
<i>Independent variables</i>						
Work design competence	.206*	.756***	.325***	.528*	-.248*	-.655**
Leadership	.071	.123	.292**	.296*	-.214*	-.065
Social support	.043*	.100	.067	-.032	-.078	-.201
<i>Model statistics</i>						
N	174	63	174	63	174	63
F-value	8.217***	13.597***	8.181***	4.287***	9.290***	9.068***
R²	0.174	0.531	0.406	0.519	0.187	0.417
Adj. R²	0.153	0.492	0.391	0.479	0.167	0.371

Results are reported as non-standardised coefficients.

We report p-values as follows: ***p < 0.001, **p < 0.01, *p < 0.05, p < 0.1 in italics.

Performance: The model is significant for both males ($F(3, 36) = 13.597, p < .001$) and females ($F(3, 117) = 8.217, p < .001$). For females, the model explains a high degree of performance variability (Cohan, 1992) with 53.1% for males, 17.4%. For females, the variables work design competence and perceived social support are significant, while the variable leadership ($p = .081$) is only weakly significant. For males, only the variable work design competence is significant, while leadership and social support are not.

Satisfaction: The model is significant for both males ($F(3, 36) = 4.287, p < .001$) and females ($F(3, 117) = 8.181, p < .001$). The model explains the variability of satisfaction among female participants with 40.6% and in male participants with 51.9%. The variables work design competence and leadership are significant for females, the factor social support is weakly significant ($p = .083$). The factors work design competence and leadership are also significant for males, but social support is not.

Stress perception: The model is significant for both males ($F(3, 38) = 9.068, p < .001$) and females ($F(3, 121) = 9.290, p < .001$) with a renewed high explanation of the variability (18.7% for females and 41.7% for males). For females, the variables work design competence and leadership are significant, while the variable social support is not. For males, only the variable work design competence is significant.

The results with regard to the hypotheses listed are given in Table 4:

Table 4: Summary of Results

Hypotheses	Performance		Satisfaction		Stress perception	
	Expectation	Result	Expectation	Result	Expectation	Result
H1: Work design competence	+	S	+	S	-	S
H2: Leadership	+	Ps	+	S	-	Ps
H3: Social support	+	Ps	+	Ps	-	Ns

S = Supported, Ps = Partially supported, Ns = Not supported.

5. Discussion

One aim of the study was to identify gender-specific success factors, resources and burdens in remote work. As a first step, men and women were compared in their experience working from home. That working from

home can lead to more satisfaction, better performance and a lower level of perceived stress corresponds to previous studies (Grant et al., 2019; Bloom, 2015). However, the fact that women report less stress and at the same time more satisfaction and better performance is contradictory to other studies carried out during the COVID-19 pandemic (Schneider et al., 2020; Hartig et al. 2007; KKH 2022). One reason could be that women do assume a larger share of family duties (Hank and Steinbach, 2020), but the relative share of activities in studies in the United States (Carlson et al., 2020) or Australia (Craig and Churchill, 2020) has not changed. Thus, the relative burden on women working from home remained the same, but the possibility of remote work could have made it easier for women to carry out both their professional and private tasks. This is different in Germany (DGB 2021). However, this effect has been weakened due to the survey period, which coincided with a new lockdown in Germany, whereas in contrast to the previously mentioned studies, daycare centres and schools remained open. This could be an indication that the possibility of working from home combined with adequate childcare services relieves women and especially mothers from some of their burdens. This is also supported by the fact that mothers and fathers report better performance and higher satisfaction working from home compared to people without children. Similar results for satisfaction were also found by Benzeval et al. (2020). They report that parents working from home are more likely to report an improvement in their relationship with their children during closure. For those who do not have children, the lack of social life could have a negative impact on their well-being working from home (Recchi et al., 2020). Another indication is that, compared to fathers, mothers report a lower level of perceived stress, better performance and higher satisfaction in remote work in contrast to the regular workplace. However, it must be noted that these are mostly descriptive and non-significant differences. One reason why gender in the present study had little significant influence on the dependent variables could have been the composition of the sample. Higher education and status have been associated with higher satisfaction and better performance in previous studies (Golding et al. 1983, Keyes et al., 2002). In the present study, however, women and men were homogeneously represented in all status groups, so that there was no gender-specific status difference that could influence the result.

Another aim of the study was to determine factors influencing successful remote work. In this context, work design competence turned out to be the most influential factor, as it has a statistically significant influence for all dependent variables as well as for both genders. One possible reason for this may be that working from home is a challenge for most people. It may result in problems with the reconciliation of work and the private life (Schieman et al., 2021) and obstacles to proper communication with superiors and team members (Fay and Kline, 2012). Employees may also suffer from loss of ties and feel socially isolated (Toscano and Zappalà, 2020). The organisation, which is traditionally considered a resource to promote motivation, performance and health (Dettmers and Clauß, 2018), was not available as a result of the pandemic. With a high degree of personal work design competence, greater creative leeway can be used as a resource, lead to a satisfactory design of one's own work and help avoid additional burdens and overload (ibid.).

An important resource for employees is the perceived support from their partners. However, this had a weakly significant influence on the variable satisfaction and a significant influence on performance only for women. The reason for this could be that women assume a larger share of household chores (Czymara et al., 2021) and a perceived unequal allocation of these can be associated with relationship conflicts, reduced individual well-being and even deteriorated performance in the workplace (Damingler, 2019). More support reduces the perceived unequal allocation of household chores.

For women, the factor "remote leadership" had a significant influence on stress perception and satisfaction as well as a weakly significant influence on performance; for men, only on satisfaction. This shows that even if the pandemic eliminated classic communication channels and direct contact as a tool for managers, they nevertheless had a positive impact, especially on female employees. This is also consistent with previous studies that found similar results (Borgmann et al., 2016).

5.1 Practical Implications

Overall, the results show the importance of the personal resource of work design competence in particular, which showed the greatest effect in the study by far (cf. Tables 5–7) and was relevant for both genders as well as for all dependent variables. Even before the pandemic, the world of work was characterised by an increase in flexibility and the associated increasing demands on employee agility (Dettmers and Mülders, 2020; Franken, 2022). Employees must be able to design their own way of working, especially when working from home. This illustrates the need to promote employees' work design competencies. Dettmers and Mülders (2020) propose two different options for this. On the one hand, the online-based tool EngAGE-Coach (www.engage-coach.de)

developed as part of the EngAGE project, which is systematically geared towards increasing work design competence. On the other hand, they suggest “job crafting” interventions. These aim at concrete improvements in work design with regard to the respective work situation. They usually include three key steps: Analysis of the work situation, preparation of a design plan and implementation of the plan (ibid.). In addition, it is necessary to promote employees’ agile mind-sets as a prerequisite for the remote work of the future, e.g. through the implementation of agile structures and agile methods (Franken, 2022).

5.2 Future Research and Restrictions

The study has provided initial evidence that working from home has the potential to relieve employees, and women in particular, from some of their burdens, provided that appropriate management concepts and environmental factors (such as childcare) are in place. However, this study did not address differences between people with and without adequate childcare. Further research could take a closer look at these differences. The influence of a person’s position and status on their perception of performance, satisfaction and stress should also be investigated in further studies. It should be noted that the reported differences between men and women were descriptive in nature. In addition, the conclusions drawn on the overall population’s situation are limited by the fact that the selection of the comparatively small sample size was not random and the study participants were predominantly well educated.

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