Working From Home and Well-Being During the COVID-19 Pandemic: A Moderated Mediation Model of Supervisor Support and Loneliness

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Abstract

Background and Objectives: The COVID-19 pandemic has disrupted the way many people work by inducing an unprecedented growth in the number of employees working from home. As a consequence, employees complain about high work-related discomfort and loneliness. Due to the recency of the pandemic, research lacks insights into the influence of working from home on employees' mental health and ways to enhance it. This study sheds light on these critical questions by testing a moderated mediation model. It is assumed that the more employees work from home, the lower is their job-related subjective well-being. Additionally, it is suggested that loneliness at work mediates this direct effect. Also, the buffering role of the perceived quality of supervisor support on the mediation is integrated into the model. Method: One hundred and sixteen German employees filled out an online questionnaire. The sample was randomly selected and consisted of 47.4% males and 52.6% females with an average age of 49.15 years (SD = 11.67), ranging from 19 years to 67 years. Results: The moderated mediation model was not significant. The extent of working from home had no impact on employees' job-related subjective well-being and loneliness at work. The effect of loneliness at work on job-related subjective well-being was, however, negative and significant. Further, the perceived quality of supervisor support had no buffering effect on the mediation. Although not outlined in the hypotheses, the perceived quality of supervisor support had a significant main impact on loneliness at work and was moderately correlated with job-related subjective well-being. Conclusion: The results show that lonely employees tend to experience lower well-being. Further, regardless of the extent of working from home, employees' wellbeing and loneliness level does not change. Thus, managers do not have to change the frequency of working from home to enhance employees' mental health. However, the quality of supervisor support can lower employees' loneliness and enhance their well-being. More specific implications of how managers can apply the findings are discussed.

Working From Home and Well-Being During the COVID-19 Pandemic: A Moderated Mediation Model of Supervisor Support and Loneliness

Since the beginning of the COVID-19 pandemic, the working life of millions of people has changed tremendously. To reduce the spread of the virus and to maintain employment, an unprecedentedly high number of people needed to arrange working from home (WFH) (Kniffin et al., 2020; Xiao et al., 2021). Countries that rarely offered WFH before the pandemic experienced a strong increase. For example, in Germany, the proportion of people WFH was 12% in 2018 and expanded to 41% after the first lockdown (Arntz et al., 2020; Eurofound, 2020). As the physical distancing regulations continued, more employees needed to arrange WFH.

Few organisations anticipated the shift to working from home and its potential impact on employees' mental health. Bouziri et al. (2020) explained that managers could rarely prepare the new work arrangements and could not implement essential mental health considerations. Additionally, the adjustment to WFH was involuntary, meaning that several employees were forced to work from home, often full-time, and for extended periods (Pirzadeh & Lingard, 202; Waizenegger et al., 2020). As a result, many German employees who worked from home have reported feeling lonely (44%) and being emotionally exhausted (18%) (Eurofound, 2020; Ipsos, 2020). This data suggests that WFH increased employees' loneliness and decreased their wellbeing.

As also in the general population loneliness levels increased and lowered well-being was measured, it is not clear how WFH affects employees' mental health in the context of the pandemic (Bu et al., 2020; Li & Wang, 2020; Sibley et al., 2020; van der Velden et al., 2021). Given the unique situation, the current study aims to fill this research gap and additionally examines how to counteract employees' loneliness and low well-being. Determining the influence of WFH on employees' mental health and ways to enhance it, can provide insights into how to organise and manage WFH in the future.

Well-Being and WFH

The recent global shift to working from home has revived the debate about how WFH influences employees' well-being. Generally, well-being is the "combination of feeling good and functioning effectively" and it can be enhanced when WFH (Huppert, 2009; Song & Gao, 2020). To begin with, WFH reduces daily commuting which saves time that can be spent with family or friends (Anderson et al., 2015). Ipsen et al. (2021) found that reduced commuting time heightens the personal and family well-being of employees currently WFH. Additionally, WFH provides employees with more autonomy to structure their working days according to

individual needs. For instance, employees can work at times when they are most productive and take breaks when needed (Anderson et al., 2015; Waizenegger et al., 2020). Increased autonomy has been shown to promote a healthier work-life balance with positive effects on well-being (Wong et al., 2020; Xiao et al., 2021). Also, employees reported more job satisfaction and decreased stress due to fewer in-office distractions and better concentration on work tasks (Waizenegger et al., 2020). From these advantages, it can be assumed that the more employees work from home, the higher is their general well-being.

Despite the reported advantages of WFH, research has also found that WFH can reduce employees' well-being. As the boundary between work and home blurs when WFH, employees frequently invest more time in job-related tasks. Especially distraction from the home environment and family can extend working hours. Such work-to-home tensions can be emotionally straining and cause tiredness, emotional instability, and decreased well-being (Waizenegger et al., 2020; Xiao et al., 2021). Additionally, the use of information and communication technology increases the responsiveness to work-related emails and calls during breaks (Xiao et al., 2021). This difficulty of mentally disengaging from work can cause distress in employees (Evanoff et al., 2020). These disadvantages of WFH may offset its advantages and highlight the ambiguity in research of the overall effect of WFH on well-being. **Loneliness at Work and WFH**

Experiencing loneliness at work is the aversive state experienced when a discrepancy exists between the work relationships one wishes to have and those one perceives to have (Ayazlar & Güzel, 2014; Heinrich & Gullone, 2006; Zhou, 2018). This definition comprises the emotional component of loneliness which is an unpleasant feeling derived from the absence of intimate and social needs. Also, it includes the cognitive component, meaning the perception that one's work relationships do not meet personal expectations (Heinrich & Gullone, 2006). Therefore, loneliness at work signals dissatisfaction with one's work relationships and one's social integration in the community at work.

When WFH, it can be assumed that employees' work-relationships suffer, and their work-related loneliness increases. Research has highlighted that social interactions with coworkers are lacking when being restricted to WFH (Waizenegger et al., 2020; Xiao et al., 2021). Fewer face-to-face interactions, including small talks and handshakes, make it difficult to maintain working friendships (Kniffin et al., 2020; Redmond et al., 2018; Waizenegger et al., 2020; Xiao et al., 2021). Research has found that regular virtual meetings are thus essential for employees to feel part of a team, and especially for those living alone (Waizenegger et al., 2020). Nevertheless, some employees have claimed that conversations in virtual meetings are mainly task-focused which does not fulfil their psychological need to belong (B. Wang et al., 2021). Therefore, WFH poses a challenge to maintaining work relationships and increases the risk of experiencing loneliness at work.

Employees might also feel lonely due to fewer interactions with their supervisor. Research has shown that employees who work from home report frequently irregular contact with management (Bentley et al., 2016). They claim to be at a disadvantage compared to their in-office co-workers as they miss information and get less attention and feedback from their supervisor. As a result, the WFH population experiences higher levels of professional and social isolation than in-office workers as well as increased feelings of loneliness (Bentley et al., 2016; Song & Gao, 2020; Waizenegger et al., 2020). This underlines the importance of having regular contact with the supervisor to minimise feelings of marginalisation and loneliness in employees.

Loneliness at Work and Well-Being

Loneliness at work might be negatively related to subjective well-being. This can be explained when considering two main categories of well-being, namely subjective and objective well-being. Whereas subjective well-being concerns one's own assessment of pleasant and unpleasant emotions, objective well-being is based on evaluations such as the fulfilment of certain needs or external indicators (e.g., income) (Erdil & Ertosun, 2011; Hombrados-Mendieta et al., 2013; Samman, 2007). As loneliness is a construct based on individual perceptions and emotions, it is reasonable to investigate it in relation to subjective well-being.

Throughout the literature, a negative association between loneliness and subjective well-being has been reported. Although evidence from the workplace is rare, one study by Erdil and Ertosun (2011) investigated subjective well-being and loneliness and found a significant negative relationship between both variables. Also, in other contexts, subjective well-being and loneliness were negatively related. For instance, Arslan (2021) examined social exclusion among adolescents in the school setting and found that loneliness fully mediated the relationship between social exclusion and subjective well-being. In addition, loneliness has been shown to negatively influence subjective well-being across time (Vanderweele et al., 2012). This agreement in research might be a sound basis to assume a negative relationship between loneliness at work and subjective well-being.

Social Support

Social support might be a factor improving employees' well-being. Generally, social support can be defined as the social network resources individuals perceive as available or that

are actually provided and that enhance their capacity to deal with stress (Charoensukmongkol & Phungsoonthorn, 2020; Gottlieb & Bergen, 2010). Research has confirmed that the availability of social network resources enhances individuals' optimism and their abilities to deal successfully with stress which, in turn, increases life satisfaction and well-being (Chao, 2011; Karademas, 2006). Thus, a supportive work environment might be important to maintain employees' job-related well-being, and especially in stressful times such as the current pandemic.

Social support might also be impactful in counteracting loneliness in employees. Throughout the literature, social support was revealed as a key variable in lowering individuals' loneliness (Arslan, 2021; Nicpon et al., 2006; J. Wang et al., 2018). Andersson (1998) explained that both variables can be seen as opposites, in which social support can be illustrated as "the positive pole" and loneliness as the "negative pole". As social network resources are not perceived by lonely individuals, they report significantly less social support than individuals who are not lonely (Nicpon et al., 2006). Therefore, it stands to reason that by enhancing the perceived social support of employees, their loneliness levels decrease.

Social support can be measured in terms of quantitative and qualitative adequacy from the recipient's perspective. Quantitative support means the amount of support received (e.g., frequency of social contacts), whereas qualitative support means the subjective evaluation of the appropriateness of the support (Lee & Dik, 2017). Prior research revealed that the supporting quality exceeds the supporting quantity (Wright et al. 2006). VanderVoort (1999) found, for instance, that the quality of social support, and particularly the emotional support, had a significant positive impact on an individuals' mental health whereas the quantity did not. It is thus reasonable to assume that the quality of social support is decisive to improve employees' well-being and decrease their loneliness.

Supervisor Support and Well-Being

Supervisor support can be considered as a form of social support and thus might enhance employees' well-being. This originates in the fact that supervisors have a "superior" position and that their actions can influence how comfortable employees feel at work (Stoica et al., 2014). Charoensukmongkol and Phungsoonthorn (2020) explained that supervisors are the main source of social support at the workplace because their position allows them to reward, encourage, and protect employees. For instance, supervisors can regulate employees' workload and when working structures are conscientiously planned and employees are supported in their efforts, their well-being might increase (Monnot & Beehr, 2014; Stoica et al., 2014). Supervisors are thus in a position that requires sensitivity to make employees feel comfortable at work.

Literature confirms a positive relationship between supervisor support and employees' well-being. Several studies have shown that employees who experienced their supervisors as considerate and supportive had higher well-being scores than those who rated their supervisors as inconsiderate and not supportive (Gilbreath & Benson, 2004; Sommovigo et al., 2019; Stout, 1984; Van Dierendonck et al., 2004). Also, in terms of employees' subjective well-being, research has revealed that supervisor support has a strong and positive influence on it (Monnot & Beehr, 2014). On top of that, Mohr et al. (2021) emphasised the importance of the quality of supervisor support by showing that when supervisory skills are enhanced, employees' well-being increases. These research outcomes suggest that high-quality supervisor support might have a positive impact on employees' job-related subjective well-being.

Supervisor Support and Loneliness at Work

Employees' loneliness at work might potentially be decreased by supervisor support. Wright (2007) noted that authentic social support from management can evoke trust and feelings to belong to the organisation. Contrastingly, poor management support can inflict distress on employees and can consequently lead to feelings of social isolation and loneliness. Although research in this area is rare, some scholars found a significant negative relationship between supervisor support and loneliness (Stoica et al., 2014; Wright, 2007). Peng et al. (2017) added that when the social exchange between employees and supervisors is based on mutual trust, support, and respect, the likelihood to experience loneliness decreases. Overall, the quality of supervisor support might be a meaningful factor in alleviating loneliness in employees.

Research Model

The above literature review has shown that the disagreement of how WFH influences well-being needs to be further investigated. Due to the advantages and disadvantages of WFH, the overall impact of WFH on employees' well-being is still unclear (Song & Gao, 2020). The shift to WFH was unanticipated, and organisations could not implement necessary mental health considerations for employees. It might be that the negative sides of WFH prevail during the pandemic, and that therefore employees who work a greater proportion from home experience its disadvantages more intensively than employees working from home occasionally or not at all (Kniffin et al., 2020; Vander Elst et al., 2017). As some pre-COVID-19 studies have revealed a negative relationship between the extent worked from home and different mental health variables (Golden & Veiga, 2005; Virick et al., 2010), the first hypothesis is that

a higher proportion of WFH reduces employees' subjective well-being at work (see Hypothesis 1).

WFH and subjective well-being at work should be examined in relation to loneliness at work. Firstly, the current high levels of loneliness in employees might be explained by a shortage of social interactions with co-workers and supervisors when WFH (Bentley et al., 2016; Waizenegger et al., 2020; Xiao et al., 2021). Thus, it is reasonable to assume that a greater proportion of hours worked from home increases employees' degree of loneliness at work. Secondly, there is considerable evidence for a negative relationship between loneliness and subjective well-being, particularly as both constructs entail a cognitive component (perception) and an emotional component (feelings) (Erdil & Ertosun, 2011; Heinrich & Gullone, 2006; Samman, 2007). Taken together, the combination of the three variables lets one assume that loneliness at work mediates the relationship between the proportion of hours worked from home and subjective well-being at work (see Hypothesis 2).

The perceived quality of supervisor support might be especially important to investigate in counteracting employees' loneliness and low well-being during the COVID-19 pandemic. Scholars explained that supervisor support buffers crisis-related stress and uncertainties in employees, and hence reduces their loneliness and emotional exhaustion (Charoensukmongkol & Phungsoonthorn, 2020; Shin et al., 2020; Tummers et al., 2018). Supervisor support is therefore suggested as a moderator of the relationship between the proportion of hours worked from home and loneliness at work (see Hypothesis 3) as well as of the relationship between loneliness at work and job-related subjective well-being (see Hypothesis 4). In the following, the hypotheses are stated, and the research model is illustrated in Figure 1.

- Hypothesis 1: The greater the proportion of hours worked from home, the lower the degree of job-related subjective well-being.
- Hypothesis 2: The negative relationship between the proportion of hours worked from home and job-related subjective well-being is mediated by loneliness at work.
- Hypothesis 3: The perceived quality of supervisor support moderates the relationship between the proportion of hours worked from home and loneliness at work.
- Hypothesis 4: The perceived quality of supervisor support moderates the relationship between loneliness at work and job-related subjective well-being.

Figure 1.

Moderated Mediation Model



Note. The moderated mediation model displays the direct effect of the proportion of hours worked from home on job-related subjective well-being. This direct relationship is mediated by loneliness at work. Perceived quality of supervisor support moderates the mediation, namely the relationship between the proportion of hours worked from home and loneliness at work as well as the relationship between loneliness at work and job-related subjective well-being.

Method

Design

A questionnaire survey design was chosen to conduct a cross-sectional study.

Participants

For the recruitment of participants, a market research institution with a panel of around 100.000 people was engaged. This panel was representative of the German population; however, it contained slightly more females (60%) than males (40%). Through random sampling, participants fitting the inclusion criteria were invited via email to take part in this online study. The inclusion criteria were the following: participants needed to be 18 years or older, be an employee in an organisation that employs ten or more people, and participants needed to have a supervisor at work. Participants working for a micro-organisation (employing less than ten employees) were excluded from this study as they are frequently characterised by loose structures which make boundaries of supervision and responsibilities less clear (Aslan, 2021; Robbins & Barnwell, 2006). People who fulfilled the inclusion criteria were offered an incentive of 0.35 euro when taking part in this study.

A total of 126 participants took part in the survey from which the data of 10 participants were excluded due to missing data. Most of the 116 participants were German nationals, representing 94% of the sample. The remaining nationalities were Polish (0.9%), Italian (0.9%), and Turkish (0.9%), or other (3.4%). The sample consisted of 47.4% males and 52.6% females. The average age of the participants was 49.15 years (SD = 11.67), ranging from 19 years to 67 years. Regarding the highest educational qualification, the majority of the sample (44.8%) had vocational training. The rest was divided into less than high school education (15.5%), high school degree (13.8%), bachelor's degree (10.3%), master's degree (13.8%), and postdoctoral degree (1.7%).

Job characteristics of the sample were as follows: 20.7% were employed at a small organisation (10-49 employees); 30.2% at a medium-sized organisation (50-249 employees); and 49.1% at a large organisation (250 or more employees). In most participants' jobs, a lot of social interactions were involved (42.2%) or a moderate amount (41.4%). A minority (16.4%) reported little job-related social interactions.

Measures

The study's online questionnaire (see Appendix A) contained demographic and jobrelated questions as well as the Loneliness at Work Scale, the Job-Related Affective Well-being Scale, and the Survey of Perceived Supervisory Support. To enhance the quality of the data, a total of two attention-check questions were added. Furthermore, the questionnaire needed to be translated from the English to the German language as the sample comprised exclusively of participants living in Germany. To ensure the accuracy of the translation, the German version was back-translated by an external bilingual person (Brislin, 1970). Lastly, participants were required to have a device with internet access to fill out the questionnaire.

Demographic and Organisational Data

Data were collected on participants' nationality, age, gender, and education. In addition, participants indicated information about their job, namely the number of hours worked on average per week from the workplace, from home, and in total. Also, participants selected the size of the organisation they are working for (small, medium-sized, large) and the degree of social interactions during work (little, moderate, a lot).

Loneliness at Work Scale

The Loneliness at Work Scale (Wright et al. 2006) was used to measure the degree of employees' work-related loneliness. The scale contains 16 items of two dimensions: emotional deprivation (nine items) and social companionship (seven items). An example item for emotional deprivation is "I feel isolated when I am with my co-workers" and for social companionship, the following example item can be stated: "There is no one at work I can share personal thoughts with if I want to". Participants rate their agreement with all items on a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). To derive a total score, the items of both dimensions are added to a sum score, so that higher scores indicate a higher degree of loneliness at work (Wright et al., 2006). Wright et al. (2006) examined 514 employees and found a Cronbach's alpha of 0.95 and a value of 0.83 as a test-retest measure over a time period of four to seven weeks. Similarly, the current study calculated a Cronbach's alpha of 0.95.

Job-Related Affective Well-Being Scale

The Job-Related Affective Well-Being Scale measures job-related or context-free wellbeing depending on the formulation of the instruction (Warr, 1990). For this study, the jobrelated version was applied by asking participants "Thinking of the past two weeks, how much of the time has your job made you feel each of the following?". Participants rated on a 6-point Likert-type scale, ranging from 1 (*never*) to 6 (*all the time*), a total of 12 mood-related items: six positive feelings (relaxed, calm, contented, optimistic, enthusiastic, cheerful) and six negative ones (worried, depressed, gloomy, tense, miserable, uneasy) (Mäkikangas et al., 2007). Although the items were intended to measure the axes anxious-comfort and depressedenthusiastic, previous research could not confirm Warr's (1990) distinction between items belonging to one of each axes (Daniels, 2000). Thus, Horn et al. (2004) suggested calculating a total score defined as the sum score of the items; a higher score indicated higher job-related affective well-being. Horn et al. (2004) examined 1308 Dutch teachers and found an internal consistency of .92. This study calculated a Cronbach's alpha of 0.94.

Survey of Perceived Supervisory Support

The Survey of Perceived Supervisory Support measures employees' perception of how much their supervisor values their contributions at work and is concerned with their well-being (Kottke & Sharafinski, 1988). This measurement might be in line with the current study's focus on the quality of supervisor support instead of its quantity. The Survey of Perceived Supervisory Support consists of 16 items identical to the Survey of Perceived Organisational Support (Eisenberger et al., 1986), however, the word "organisation" is substituted for "supervisor". Example items of the Survey of Perceived Supervisory Support include "My supervisor takes pride in my accomplishments" and "My supervisor really cares about my well-being". Participants were asked to answer the items on a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) (Kottke & Sharafinski, 1988). To calculate the total score, item scores were added so that a higher sum score indicated greater perceived supervisor

support. Based on a sample of 384 salespeople, DeConinck and Johnson (2009) calculated an internal consistency of 0.93. Similarly, this study found a Cronbach's alpha of 0.97.

Procedure

Before the questionnaire was shared with the market research institution, the study was approved by the ethics committee of the Faculty of Behavioural, Management, and Social Sciences at the University of Twente (request number: 210529). Afterwards, the market research institution invited participants via email to fill out the online questionnaire. First, participants signed an informed consent (see Appendix B) and received contact details of the researcher for further questions or when being interested in study results. Then, participants' eligibility to take part in the study was checked by asking four screening questions. If participants fulfilled the criteria, they were transferred to the general questions about their job. Next, the above-described scales were administered in random order. At the end of the questionnaire, participants filled in their demographic data.

Data analysis

For the data analysis, the Statistical Package for the Social Sciences (Version 27.0) was used. To begin with, missing data were tackled via listwise deletion. The total scores of the Loneliness at Work Scale, the Job-Related Affective Well-Being Scale, and the Survey of Perceived Supervisory Support were calculated by including reversed codings. The following variables emerged from that: loneliness at work, job-related subjective well-being, and perceived quality of supervisor support. Additionally, a new variable was determined: the proportion of hours worked from home compared to the hours worked in total. Afterwards, the frequencies, mean scores, standard deviations, as well as minimum and maximum scores were computed for the variables weekly working hours (in total, from home, from the workplace), the proportion of hours worked from home, loneliness at work, subjective well-being at work, and perceived quality of supervisor support. In order to ensure the validity of data, it was checked for normality, linearity, homoscedasticity, and multicollinearity as well as for outliers. Although some scholars consider outliers as a value of the interquartile range multiplied by 1.5, this study chose a multiplier of 3 because more than 50% of the time, extreme values are labelled as outliers although they are not (Hoaglin & Iglewicz, 1987).

After the initial data preparations, a significance level of 0.05 was chosen for all the following analyses. First, the relationships between demographic characteristics and organisational as well as mental health variables were examined to account for possible patterns in the data. Specifically, weekly working hours (in total, from the workplace, from home), loneliness at work, job-related subjective well-being, and perceived quality of supervisor

support were tested on differences in relation to age, gender, and education level. For that, two one-way analyses of variance were run with gender and education as separated independent variables and organisational as well as mental health variables as dependent variables. Second, a linear regression analysis was run with age as an independent variable and the organisational as well as mental health variables as dependent variables.

Before the hypotheses were tested, a correlation analysis was conducted between the proportion of hours worked from home, loneliness at work, job-related subjective well-being, perceived quality of supervisor support, and social interactions involved in the job. This provided an overview of the relationships between the variables of the research model and simultaneously checked for social interactions involved in the job as a possible confounding variable influencing loneliness at work.

The four hypotheses were simultaneously tested in a path analysis via PROCESS macro (Model 58) by Hayes (2017) with 5000 bootstrapping-based resampling. The proportion of hours worked from home was selected as the independent variable, job-related subjective wellbeing as the dependent variable, loneliness at work as the mediator variable, and perceived quality of supervisor support as the moderator of the relationship between the proportion of hours worked from home and loneliness at work and for the relationship between loneliness at work and job-related subjective well-being. Two graphical illustrations were created for the moderations. The first one with the proportion of hours worked from home on the x-axis and loneliness at work on the y-axis. The second one with loneliness at work on the x-axis and job-related subjective well-being on the y-axis. In both graphical illustrations, the moderator perceived quality of supervisor support was added on three levels: low, medium, and high.

Results

Descriptive Statistics

Descriptive statistics of the variables of interest are presented in Table 1. It also displays the proportion of hours worked from the workplace and from home. The majority of participants spent most of their working time at the workplace. Specifically, 50% worked constantly in the physical boundaries of the organisation, 37.9% worked partly from home, and a minority of 12.1% indicated WFH full-time.

Table 1

Descriptive Statistics of the Weekly Working Hours, Loneliness at Work (LW), Job-Related Subjective Well-Being (JSW), and Perceived Quality of Supervisor Support (PQSS)

Variable	М	SD	Minimum	Maximum	Proportion
Weekly working hours:					
In total	36.02	8.55	10	55	-
From the workplace	25.30	15.38	0	55	.72
From home	10.10	13.34	0	40	.28
LW	43.60	17.40	16	102	-
JSW	50.06	12.00	12	70	-
PQSS	75.34	20.36	16	112	-

Note. *N* = 116.

Demographic, Organisational, and Mental Health Variables

In terms of the connection between demographic, organisational, and mental health variables, the first one-way analysis of variance (see Table 2) revealed that men worked significantly more hours in total per week and from the workplace compared to women. However, no significant difference was found in the number of hours men and women worked from home. Also, there were no significant differences between men and women experiencing loneliness at work, job-related subjective well-being, and perceived quality of supervisor support.

The second one-way analysis of variance (see Table 3) indicated no significant differences in educational levels regarding the hours worked in total, the hours worked from the workplace, and the hours worked from home. Also, the degree of loneliness at work, job-related subjective well-being, and perceived quality of supervisor support did not significantly differ concerning the education levels.

Table 2

One-Way Analysis of Variance: Gender and Education as Separate Predictors of Weekly Working Hours (in Total, From the Workplace, From Home)

Predictor	Working hours in total				Working hours from the workplace				Worl	Working hours from home			
	SS	MS	F	р	SS	MS	F	р	SS	MS	F	р	
Gender	1494.56	1494.56	24.68	<.001	2553.07	2553.07	11.81	.00	408.45	408.45	2.32	.13	
Education	153.13	30.63	0.41	.84	1578.58	315.72	1.36	.25	1737.83	347.57	2.04	.08	
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Note. N = 116. For the predictor gender df = 1,114; for the predictor education df = 5,110.

Table 3

One-Way Analysis of Variance: Gender and Education as Separate Predictors of Loneliness at Work, Job-Related Subjective Well-Being, and Perceived Quality of Supervisor Support

Predictor	Loneliness at work			Job-rela	Job-related subjective well-being				Perceived quality of supervisor support			
	SS	MS	F	р	SS	MS	F	р	SS	MS	F	р
Gender	9.06	9.06	0.03	.86	85.34	85.34	0.60	.44	157.49	157.49	0.38	.54
Education	1178.31	235.66	0.77	.57	149.35	29.87	0.20	.96	1340.61	268.12	0.64	.67

Note. N = 116. For the predictor gender df = 1,114; for the predictor education df = 5,110.

Lastly, the regression analysis showed that age did not significantly influence the number of hours worked in total, b = -.10, t(114) = -1.40, p = .17, the number of hours worked from the workplace, b = .03, t(114) = 0.22., p = .82, or the number of hours worked from home, b = -.15, t(114) = -1.46., p = .15. Also, age did not significantly impact loneliness at work, b = -.21, t(114) = -1.52, p = .13, and job-related subjective well-being, b = .02, t(114) = 1.83, p = .07. However, age had a significant influence on perceived quality of supervisor support, b = .35, t(114) = 2.18, p = .03.

Hypotheses testing

Before the hypotheses were tested, the correlation analysis was run (see Table 6). A significant negative and moderate correlation was found between loneliness at work and job-related subjective well-being as well as between loneliness at work and the perceived quality of supervisor support. In addition, the perceived quality of supervisor support was significantly positive and moderately associated with job-related subjective well-being. As the social interactions involved in the job were not significantly correlated with loneliness at work, it was not considered as a third variable influencing the moderated mediation analysis.

Table 6

	1	2	3	4	5
1. PWFH	-				
2. LW	02	-			
3. JSW	.06	67*	-		
4. PQSS	.12	66*	.53*	-	
5. SIJ	.01	.09	10	.02	-

Correlations for the Main Study Variables and Social Interactions Involved in the Job

Note. N = 116. PWFH = proportion of hours worked from home; LW = loneliness at work; JSW = job-related subjective well-being; PQSS = perceived quality of supervisor support; SIJ = social interactions involved in the job.

*p < .01, two-tailed.

The hypotheses testing revealed that there was no significant relationship between the proportion of hours worked from home and job-related subjective well-being, b = 1.03, SE = 2.30, p = 65. Also, the proportion of hours worked from home did not significantly impact loneliness at work, b = 24.03, SE = 14.26, p = .09. However, the relationship between loneliness at work and job-related subjective well-being was significant and negative, b = -0.50, SE = 0.15,

p = .00. Overall, the mediation could not be confirmed by the analysis, b = -3.92, SE = 1.62, 95% CI [-4.47, 1.79].

In terms of the moderator analyses, the perceived quality of supervisor support had a significant effect on loneliness at work, b = -0.51, SE = 0.07, p < .001. However, the interaction between the perceived quality of supervisor support and the proportion of hours worked from home was not significant, b = -0.26, SE = 0.17, p = 13. Thus, the moderation was not significant (see Figure 2).

Figure 2

Perceived Quality of Supervisor Support as the Moderator Between the Proportion of Hours Worked From Home and Loneliness at Work



Note. The effect of the independent variable proportion of hours worked from home on the mediator variable loneliness at work does not vary significantly across three levels of the moderator perceived quality of supervisor support: High support (+1 SD = 95.70); medium support (M = 75.3); low support (-1 SD = 54.97).

Further, the relationship between perceived quality of supervisor support and jobrelated subjective well-being was not significant, b = 0.02, SE = 0.10, p = .83, as well as the interaction between perceived quality of supervisor support and loneliness at work, b = 0.00, SE = 0.00, p = .43, (see Figure 3). Taken together, the moderated mediation was not found to be significant b = -0.00, SE = 0.01, 95% CI [-0.04, 0.02].

Figure 3

Perceived Quality of Supervisor Support as the Moderator Between Loneliness at Work and Job-Related Subjective Well-Being



Note. The effect of the mediator variable loneliness at work on the dependent variable jobrelated subjective well-being does not vary significantly across three levels of the moderator perceived quality of supervisor support: High support (+1 SD = 95.70); medium support (M =75.34); low support (-1 SD = 54.97).

Discussion

The purpose of this study was to contribute to the debate of how WFH influences employees' mental health during the COVID-19 pandemic. For that, the link between the proportion of hours worked from home and employees' subjective well-being was inspected. Unexpectedly, the first hypothesis cannot be supported as a higher proportion of hours worked from home does not negatively influence job-related subjective well-being. Further, the mediating role of loneliness at work was evaluated. Contrary to the expectations, loneliness at work does not moderate the relationship between the proportion of hours worked from home and employees' subjective well-being. Thus, the second hypothesis is not confirmed. In addition, the moderating role of the perceived quality of supervisor support was inquired. As supervisor support does not moderate the relationship between the proportions of hours worked from home and loneliness at work as well as between loneliness at work and job-related subjective well-being, the third and the fourth hypotheses are not supported. Therefore, the moderated mediation model cannot be verified.

The Influence of WFH on Well-Being

The unexpected finding that the proportion of hours worked from home does not negatively impact employees' well-being, might be explained in the light of previous research. According to the literature of Oakman et al. (2020), only Vander Elst et al. (2017), similar to this study, investigated the influence of the proportion of hours worked from home on employees' well-being. In line with the current results, the researchers also found no significant relationship. Thus, regardless of how many hours employees work from home, their well-being neither increases nor decreases. One possible explanation for that might be the experienced advantages and disadvantages of WFH which influences well-being either positively or negatively (Vander Elst et al., 2017). As mentioned above, benefits of WFH such as a decreased commuting times, flexible schedules, and fewer in-office distractions have a positive effect on well-being, whereas the disadvantages of WFH such as work-family tensions and extended working hours decrease well-being (Anderson et al., 2015; Waizenegger et al., 2020; Wong et al., 2020; Xiao et al., 2021). This explanation suggests that the negative sides of WFH have not yet prevailed during the COVID-19 pandemic, and thus the extent of WFH has no influence on employees' well-being.

The Mediating Influence of Loneliness at Work

The outcome that the proportion of hours worked from home does not influence loneliness at work contradicts previous findings. Several scholars reported a general positive influence of WFH on social isolation and loneliness (Crosbie & Moore, 2004; Lizana et al., 2021; Mann & Holdsworth, 2003). Andel et al. (2021) showed, for instance, that the more hours employees worked from home, the higher was their loneliness. One possible explanation for such significant results might be grounded in the average number of hours worked from home. In the study by Andel et al. (2021), employees worked from home on average 64% of their total working hours. Contrastingly, in the current study, half of the employees did not work from home at all, and among employees WFH and the small number of hours worked from home might have influenced the current study's results. Working a small number of hours from home per week might possibly not inflict work-related loneliness as employees are still integrated into the social community at the workplace.

In line with the expectations, loneliness at work impacts job-related subjective wellbeing. This echoes previous research, suggesting that lonelier employees experience lower well-being (Vanderweele et al., 2012). Also, it reflects Erdils and Ertosun's (2011) finding that loneliness at work relates to the subjective well-being of employees. An important explanation for this significant outcome is that both constructs, loneliness and subjective well-being, entail a cognitive component and an emotional one. Specifically, both constructs measure the personal evaluation and the feeling about individual mental health states without objective comparison (Erdil & Ertosun, 2011; Huppert, 2009; Samman, 2007). In addition, studies have shown a reciprocal influence between both variables, meaning that individuals with low well-being are likely to develop feelings of loneliness as well (Vanderweele et al., 2012). This strong interconnection between both constructs might be reflected in the current study's finding that loneliness at work and job-related subjective well-being are moderately interrelated.

The Moderating Influence of Supervisor Support

Unexpectedly, the results show that the perceived quality of supervisor support does not moderate the relationship between the proportion of WFH and loneliness at work. As the relationship between the proportion of hours worked from home and loneliness at work was not significant, the moderation could not be significant as well. Although not specified in the hypothesis, the results revealed that supervisor support has a direct and negative impact on employees' level of loneliness, meaning the higher the perceived quality of social support, the less lonely an employee feels. This is in line with previous research that found a significant direct effect of supervisor support on employees' loneliness level (Stoica et al., 2014; Wright, 2007). It might thus be concluded that although the perceived quality of supervisor support does not function as a moderator, it decreases the loneliness of employees in a direct way.

The perceived quality of supervisor support also does not moderate the relationship between loneliness at work and job-related subjective well-being. In this constellation, supervisor support is not confirmed as a buffering effect although the relationship between loneliness at work and job-related subjective well-being is significant. One explanation might be that the participants of this study did not experience particularly high loneliness as assumed in times of crisis (Hager, 2018; Shin et al., 2020). Compared to other studies, the loneliness level of participants was found to be in a similar range (Arslan et al., 2020; Erdil & Ertosun, 2011; Wright, 2007). Research explains that if individuals do not experience particularly high stress, social support functions as a main effect and not as a moderation effect (Hager, 2018; Shin et al., 2020). Although not tested as a hypothesis, the current study revealed that the perceived quality of supervisor support is positively associated with job-related subjective wellbeing, and thus might supports a main effect between both variables.

Strengths and Limitations

There are three main strengths of this study that are important to mention. Firstly, the unique work situation precipitated by the current COVID-19 pandemic was recognised and examined in light of previous ambiguities outlined in the WFH research (Song & Gao, 2020). Secondly, the calls of scholars were followed to focus on the extent of WFH rather than on WFH per se (yes or no) as well as to link it to different mental health variables (Allen et al., 2015; Vander Elst et al., 2017). In particular, the current study focused on well-being and loneliness. Both variables lack investigation in the work-from-home context, which is particularly striking in the current situation as increased loneliness and decreased well-being among the current WFH population were measured (Firoz et al., 2020; Jung et al., 2021; Song & Gao, 2020). Thirdly, the study outcomes might be based on proper data as a randomised sample was used and two attention check questions were integrated into the questionnaire. As such, this study provides insights that might be valid to make claims about the mental health of the German employees during the COVID-19 pandemic.

Given the focused nature of this study, one should be careful when making general claims about employees WFH. Half of the sample did not work from home at all, and only 12% worked full-time from home. As previous research has found especially a negative impact on mental health when working primarily from home, this lack in the sample might have limited the generalisability of the outcomes (Golden & Veiga, 2005). In addition, the average age of the sample of 50 years is relatively high. This might have influenced the mental health outcome of loneliness as primarily young adults suffer from loneliness during the ongoing pandemic (Luchetti et al., 2020; McGinty et al., 2020; Wickens et al., 2021). Also, the sample consisted of 94% German employees which makes it not possible to transfer the study results to other countries offering WFH. Having a more culturally diverse sample would have been insightful as the current work-from-home policies are applied in most parts of the world. Lastly, as a cross-sectional research design was chosen, this study could not make claims about the causality between the variables and how they change in the course of time (Allen et al., 2015). Thus, a longitudinal study design that incorporates a sample with enough employees working to a considerable proportion from home and higher variability in the employee' age and nationalities need to be implemented to enhance claims about the general WFH population.

Implications

Despite these limitations, this study can contribute to managerial practices. First of all, it can be assumed that employees WFH during the COVID-19 pandemic experience its advantages and disadvantages in a relatively balanced manner. Thus, managers do not have to decrease the number of hours worked from home in order to enhance employees' well-being.

In addition, it can be argued that working from home a small proportion of the total working time does not increase loneliness in employees as their integration into the social life at the workplace might still be likely. However, this claim should be considered carefully due to contrasting findings by other scholars (Andel et al., 2021). Finally, managers should be aware of their impact on employees' mental health. Although not part of the initial hypotheses, high-quality support from the supervisor might significantly increase employees' well-being and decrease their loneliness at work. As every employee perceives the quality of supervisor support differently, supervisors should invest time in work relationships with employees to figure out what makes them feel well and integrated into the social life at work.

Direction for Future Research

In order to improve the research model, future studies should consider the abovehighlighted limitations. Firstly, employees should work a considerable time from home, for instance, full-time so that differences in the proportion of WFH on well-being and loneliness can be effectively investigated. For that, both linear regressions and curvilinear relationships should be tested (Vander Elst et al., 2017). Secondly, future studies should focus on employees between the age of 18-29 years. Young people have been found to suffer most from loneliness during the COVID-19 pandemic, and therefore are an important risk group to investigate (Luchetti et al., 2020; McGinty et al., 2020; Wickens et al., 2021). Thirdly, longitudinal studies might provide deeper and more reliable insights than cross-sectional studies. As social distancing regulations constantly change, and employees' place of work change concomitantly, (e.g. at the workplace or from home), longitudinal studies might help determine how this unstable situation impacts feelings of job-related well-being and loneliness (Allen et al., 2015).

The research model can also be extended by investigating further characteristics of WFH in relation to well-being other than its frequency. For instance, scholars reported that the shift from in-office work to WFH was involuntary, meaning it happened without the consent of employees. It might be that some employees felt forced to WFH and have experienced the change in working structures more negatively than employees who felt not forced to WFH (Kaduk et al., 2019; Pirzadeh & Lingard, 202; Waizenegger et al., 2020). Therefore, the impact of voluntary and involuntary WFH on well-being might be valuable to examine. Furthermore, the degree of how well employees could adapt to WFH might represent another meaningful factor to investigate. Previous research has found that the rapid shift to WFH challenged employees to separate work from private life and to arrange a proper workspace in their homes (Waizenegger et al., 2020; Xiao et al., 2021). It is thus reasonable to assume that employees

who could properly adapt to WFH may feel more comfortable WFH than employees who could not adapt to it.

The characteristics of WFH in relation to loneliness at work should be further examined as well. One possible factor influencing loneliness in relation to WFH is the duration of employment (Wright, 2007). Employees who are employed for a longer period of time at the same organisation might have established some valuable social connections which can be maintained when WFH. Contrastingly, employees who started their job shortly before or during the shift to WFH might not have had the chance to build work-friendships. Thus, the duration of employment could function as a moderating factor influencing the level of work-related loneliness when WFH. Moreover, the family situation of employees should also be incorporated into future studies. Research has shown that having low contact with relatives, being separated, and living alone are risk factors to developing feelings of loneliness (Bu et al., 2020; Groarke et al., 2020; Losada-Baltar et al., 2021). Hence, living with a partner or a family heightens daily social interactions that can counteract feelings of social isolation and loneliness (Luchetti et al., 2020). It might thus be that employees' living situation can influence how strongly they miss social interactions at work which directly impact their feelings of work-related loneliness.

Conclusion

The COVID-19 pandemic precipitated an involuntary shift from in-office work to WFH, with many employees reporting feeling unwell and lonely. Although organisations aim to improve the mental health of employees, research lacks the necessary insights to provide concrete advice for organisations and their management. The current study generated new knowledge by showing that the proportion of WFH has no impact on employees' work-related well-being and loneliness. Managers should therefore not expect that a decreased frequency of WFH enhances employees' mental health. Further, the constructs subjective well-being and loneliness were measured to be interconnected, meaning that employees who feel unwell are likely to feel lonely as well, and vice versa. Lastly, although supervisor support had no buffering effect on employees' well-being and loneliness, it might have a main effect. Managers should thus be aware that they might be able to mitigate the negative mental health of their subordinates by investing time and effort to ensure employees feels well and integrated into the social community at work. Despite these insights, it is still unclear why employees experience workrelated discomfort and loneliness when WFH during the ongoing pandemic. More research is therefore needed to investigate other characteristics of WFH than its frequency to reveal factors that negatively influence employees' mental health.

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Appendix A

Appendix Questionnaire (English Version)	A
Are you 18 years old or older?	
O Yes	
O No	
Are you an employee?	
O Yes	
() No	
Do you work for an organisation that employs 1	0 or more people?
O Yes	
O No	
Now, you will be asked a few questions about you	ır job.
How many hours are you working on average per	week?
How many hours are you working in average per v	week from the workplace?
How many hours are you working in average per v	week from home?

How many people are employed in the organisation you are working for?

- 0 10-49
- 0 50-249
- O 250 or more

How much social interaction (for example, with co-workers or customers) is involved in your job?

- O A lot
- O A moderate amount
- O A little

Please indicate how strongly you agree or disagree with the following statements about your perception of your supervisor.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
My supervisor values my contributions to the well-being of our department.	0	0	0	0	0	0	0
If my supervisor could hire someone to replace me at a lower salary he/she would do so.	0	0	0	0	0	0	0
My supervisor appreciates extra effort from me.	0	0	0	0	0	0	0
My supervisor strongly considers my goals and values.	0	0	0	0	0	0	0
Click on disagree.	0	0	0	0	0	0	0
My supervisor wants to know if I have any complaints.	0	0	0	0	0	0	0

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
My supervisor takes my best interests into account when he/she makes decisions that affect me.	0	0	0	0	0	0	0
Help is available from my supervisor when I have a problem.	0	0	0	0	0	0	0
My supervisor really cares about my well-being.	0	0	0	0	0	0	0
If I did the best job possible, my supervisor would be sure to notice.	0	0	0	0	0	0	0
My supervisor is willing to help me when I need a special favour.	0	0	0	0	0	0	0
My supervisor cares about my general satisfaction at work.	0	0	0	0	0	0	0
	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
If given the opportunity my supervisor would take advantage of me.	0	0	0	0	0	0	0
My supervisor shows a lot of concern for me.	0	0	0	0	0	0	0
My supervisor cares about my opinions.	0	0	0	0	0	0	0

My supervisor takes pride in my accomplishments.	0	0	0	0	0	0	0
My supervisor tries to make my job as interesting as possible.	0	0	0	0	0	0	0

Thinking of the past two weeks, how much of the time has your job made you feel each of the following:

	Never	Occasionally	Some of the time	Much of the time	Most of the time	All of the time
relaxed	0	0	0	0	0	0
worried	0	0	0	0	0	0
depressed	0	0	0	0	0	0
calm	0	0	0	0	0	0
	Never	Occasionally	Some of the time	Much of the time	Most of the time	All of the time
contented	0	0	0	0	0	0
gloomy	0	0	0	0	0	0
optimistic	0	0	0	0	0	0
tense	0	0	0	0	0	0
	Never	Occasionally	Some of the time	Much of the time	Most of the time	All of the time
enthusiastic	0	0	0	0	\circ	0
cheerful	0	0	0	0	0	0
miserable	0	0	0	0	0	0
uneasy	0	0	0	0	0	0

Please indicate how strongly you agree or disagree with the following statements about your perception of your social relationships at the workplace. Also, when you work from home or remotely, you can fill in these statements.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
l often feel abandoned by my co-workers when I am under pressure at work.	0	0	0	0	0	0	0
l often feel alienated from my co-workers.	0	0	0	0	0	0	0
I feel myself withdrawing from the people I work with.	0	0	0	0	0	0	0
I often feel emotionally distant from the people I work with.	0	0	0	0	0	0	0
I feel satisfied with the relationships I have at work.	0	0	0	0	0	0	0
There is a sense of camaraderie in my workplace.	0	0	0	0	0	0	0
	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I often feel isolated when I	\cap	\bigcirc	\bigcirc	\cap	\bigcirc	\cap	\cap

l often feel isolated when l am with my co-workers.	0	0	0	0	0	0	0
l often feel disconnected from others at work.	0	0	0	0	0	0	0
I experience a general sense of emptiness when I am at work.	0	0	0	0	0	0	0
l have social companionship/fellowship at work.	0	0	0	0	0	0	0
I feel included in the social aspects of work.	0	0	0	0	0	0	0
There is someone at work I can talk to about my day to day work problems if I need to.	0	0	0	0	0	0	0

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
There is no one at work I can share personal thoughts with if I want to.	0	0	0	0	0	0	0
Click on agree.	0	0	0	0	0	0	0
I have someone at work I can spend time with on my breaks if I want to.	0	0	0	0	0	0	0
I feel part of a group of friends at work.	0	0	0	0	0	0	0
There are people at work who take the trouble to listen to me.	0	0	0	0	0	0	0

Lastly, please fill out some demographic information.

What is your gender?	
O Male	
○ Female	
O I prefer to self-describe:	
O I prefer not to say	
How old are you?	

What is your nationality?

- Turkish
- Polish
- 🗌 Italian
- Other

What is your highest educational qualification?

- O Less than high school
- O High school graduate
- O Vocational education
- O Degree from a university of applied science/research university
- O Doctorate
- O Other

Questionnaire (German Version)

Q2. Sind Sie 18 Jahre alt oder älter?

- 🔘 Ja
- O Nein

Q3. Sind Sie eine Angestellte oder ein Angestellter?

🔿 Ja

O Nein

Q4. Arbeiten Sie für eine Organisation, die 10 oder mehr Mitarbeiterinnen/Mitarbeiter beschäftigt?

O Ja

O Nein

Q5. Haben Sie eine Vorgesetzte oder einen Vorgesetzten auf der Arbeit?

O Ja

O Nein

Q19. Nun werden Ihnen ein paar Fragen zu Ihrer Arbeit gestellt.

Q6. Wie viele Stunden arbeiten Sie im Durchschnitt pro Woche?

Q7. Wie viele Stunden arbeiten Sie im Durchschnitt pro Woche vom Arbeitsplatz aus?

Q8. Wie viele Stunden arbeiten Sie im Durchschnitt pro Woche von zu Hause aus?

Q9. Wie viele Personen sind in der Organisation, für die Sie arbeiten, beschäftigt?

0 10-49

- 0 50-249
- O 250 oder mehr

Q10. Wie viel soziale Interaktionen (z. B. mit KollegInnen oder KundInnen) sind mit Ihrer Arbeit verbunden?

- O Viele
- O Eine mittlere Menge
- O Wenige

Q13. Wenn Sie an die letzten zwei Wochen denken, wie oft hat Sie Ihr Job wie folgt fühlen lassen:

	Nie	Gelegentlich	Manchmal	Häufig	Meistens	Immer
entspannt	0	0	0	0	0	0
besorgt	0	0	0	0	0	0
deprimiert	0	0	0	0	0	0
ruhig	0	0	0	0	0	0
	Nie	Gelegentlich	Manchmal	Häufig	Meistens	Immer
zufrieden	0	0	0	0	0	0
bedrückt	0	0	0	0	0	0
optimistisch	0	0	0	0	0	0
angespannt	0	0	0	0	0	0
	Nie	Gelegentlich	Manchmal	Häufig	Meistens	Immer
begeistert	0	0	0	0	0	0
heiter	0	0	0	0	0	0
elendig	0	0	0	0	0	0
unbehaglich	0	0	0	0	0	0

Q12. Bitte geben Sie an, wie stark Sie den folgenden Aussagen über Ihre Wahrnehmung Ihrer sozialen Beziehungen am Arbeitsplatz zustimmen oder nicht zustimmen. Auch wenn Sie von zu Hause oder ortsungebunden arbeiten, können Sie diese Angaben ausfüllen.

	Stark ablehnen	Nicht zustimmen	Eher nicht zustimmen	Weder zustimmen noch ablehnen	Eher zustimmen	Zustimmen	Stark zustimmen
Ich fühle mich oft von meinen Kollegen im Stich gelassen, wenn ich bei der Arbeit unter Druck stehe.	0	0	0	0	0	0	0
Ich fühle mich oft von meinen Arbeitskollegen entfremdet.	0	0	0	0	$\bigcirc \circ$	0	0
lch spüre, dass ich mich von den Menschen, mit denen ich arbeite, zurückziehe.	0	0	0	0	0	0	0
lch fühle mich oft emotional distanziert von den Menschen, mit denen ich zusammenarbeite.	0	0	0	0	0	0	0
lch bin mit den Beziehungen, die ich bei der Arbeit habe, zufrieden.	0	0	0	0	0	0	0
Es gibt ein Gefühl der Kameradschaft an meinem Arbeitsplatz.	0	0	0	0	0	0	0

	Stark ablehnen	Nicht zustimmen	Eher nicht zustimmen	Weder zustimmen noch ablehnen	Eher zustimmen	Zustimmen	Stark zustimmen
lch fühle mich oft isoliert, wenn ich mit meinen Arbeitskollegen zusammen bin.	0	0	0	0	0	0	0
lch fühle mich bei der Arbeit oft von anderen abgekoppelt.	0	0	0	0	0	0	0
Ich erlebe ein allgemeines Gefühl der Leere, wenn ich bei der Arbeit bin.	0	0	0	0	0	0	0
Ich habe eine soziale Gesellschaft/Zusammengehörigkeit auf der Arbeit.	0	0	0	0	0	0	0
lch fühle mich in die sozialen Aspekte der Arbeit einbezogen.	0	0	0	0	0	0	0
Es gibt jemanden auf der Arbeit, mit dem ich über meine täglichen Arbeitsprobleme sprechen kann, wenn ich es brauche.	0	0	0	0	0	0	0

	Stark ablehnen	Nicht zustimmen	Eher nicht zustimmen	Weder zustimmen noch ablehnen	Eher zustimmen	Zustimmen	Stark zustimmen
Es gibt niemanden bei der Arbeit, mit dem ich persönliche Gedanken teilen kann, wenn ich das möchte.	0	0	0	0	0	0	0
Klicken Sie auf "Zustimmen".	0	0	0	0	0	0	0
Ich habe jemanden auf der Arbeit, mit dem ich in meinen Pausen Zeit verbringen kann, wenn ich möchte.	0	0	0	0	0	0	0
Ich fühle mich auf der Arbeit als Teil einer Gruppe von Freunden.	0	0	0	0	0	0	0
Es gibt Leute auf der Arbeit, die sich die Mühe machen, mir zuzuhören.	0	0	0	0	0	0	0

Q11. Bitte geben Sie an, wie stark Sie den folgenden Aussagen über Ihre Wahrnehmung von Ihrer/Ihrem Vorgesetzten auf der Arbeit zustimmen oder nicht zustimmen.

	Stark ablehnen	Nicht zustimmen	Eher nicht zustimmen	Weder zustimmen noch ablehnen	Eher zustimmen	Zustimmen	Stark zustimmen
Mein Vorgesetzter schätzt meine Beiträge zum Wohlbefinden unserer Abteilung.	0	0	0	0	0	0	0
Wenn mein Vorgesetzter jemanden einstellen könnte, der mich zu einem niedrigeren Gehalt ersetzt, würde er/sie das tun.	0	0	0	0	0	0	0

Mein Vorgesetzter schätzt zusätzliche Anstrengungen von mir.	0	0	0	0	0	0	0
Mein Vorgesetzter berücksichtigt stark meine Ziele und Werte.	0	0	0	0	0	0	0
Klicken Sie auf "Nicht zustimmen".	0	0	0	0	0	0	0
Mein Vorgesetzter möchte wissen, ob ich irgendwelche Beschwerden habe.	0	0	0	0	0	0	0
Wenn ich die bestmögliche Arbeit leisten würde, würde mein Vorgesetzter das sicher bemerken.	0	0	0	0	0	0	0
Mein Vorgesetzter ist bereit mir zu helfen, wenn ich um einen besonderen Gefallen bitte.	0	0	0	0	0	0	0
Mein Vorgesetzter kümmert sich um meine allgemeine Zufriedenheit auf der Arbeit.	0	0	0	0	0	0	0

	Stark ablehnen	Nicht zustimmen	Eher nicht zustimmen	Weder zustimmen noch ablehnen	Eher zustimmen	Zustimmen	Stark zustimmen
Mein Vorgesetzter berücksichtigt meine Interessen, wenn er/sie Entscheidungen trifft, die mich betreffen.	0	0	0	0	0	0	0
Mein Vorgesetzter kann mir helfen, wenn ich ein Problem habe.	0	0	0	0	0	0	0
Meinem Vorgesetzten liegt mein Wohlbefinden wirklich am Herzen.	0	0	0	0	0	0	0
Wenn ich die bestmögliche Arbeit leisten würde, würde mein Vorgesetzter das sicher bemerken.	0	0	0	0	0	0	0
Mein Vorgesetzter ist bereit mir zu helfen, wenn ich um einen besonderen Gefallen bitte.	0	0	0	0	0	0	0
Mein Vorgesetzter kümmert sich um meine allgemeine Zufriedenheit auf der Arbeit.	0	0	0	0	0	0	0
Mein Vorgesetzter versucht, meine Arbeit so interessant wie möglich zu gestalten.	0	0	0	0	0	0	0

	Stark ablehnen	Nicht zustimmen	Eher nicht zustimmen	Weder zustimmen noch ablehnen	Eher zustimmen	Zustimmen	Stark zustimmen
Wenn es die Möglichkeit geben würde, würde mein Vorgesetzter mich ausnutzen.	0	0	0	0	0	0	0
Mein Vorgesetzter zeigt sich sehr besorgt um mich.	0	0	0	0	0	0	0
Mein Vorgesetzter interessiert sich für meine Meinungen.	0	0	0	0	0	0	0
Mein Vorgesetzter ist stolz auf meine Leistungen.	0	0	0	0	0	0	0
Mein Vorgesetzter versucht, meine Arbeit so interessant wie möglich zu gestalten.	0	0	0	0	0	0	0

Q14. Zum Schluss geben Sie bitte noch ein paar demografische Informationen an.

Q15. Was ist Ihr Geschlecht?

- O Männlich
- O Weiblich
- O Ich beschreibe mich lieber selbst:

O Möchte ich nicht sagen

Q16. Wie alt sind Sie?

Q17. Welche Nationalität haben Sie?

- O Deutsch
- O Türkisch
- O Polnisch
- O Italienisch
- O Andere

Q18. Was ist Ihr höchster Bildungsabschluss?

- O Weniger als Abitur
- O Abitur
- O Ausbildung
- O Bachelor-Abschluss
- O Master-Abschluss
- O Doktor-Grad
- O Andere

Appendix B

Informed Consent (English Version)

Dear Sir or Madam,

You are being invited to participate in a research study titled "Working From Home and Well-Being during the COVID-19 Pandemic: A Moderated Mediation Model of Supervisor Support and Loneliness ". This study is being conducted as part of an undergraduate thesis at the University of Twente in the Department of Behavioural, Management and Social Sciences.

The aim of this research study is to investigate to what extent supervisors have an impact on employees' well-being and loneliness at work during the COVID-19 pandemic. Since the beginning of the first lockdown, an increase in workplace loneliness has been observed. Therefore, it is important to find out how loneliness of employees can be reduced and their well-being increased.

The following questionnaire will take you approximately 6 minutes to complete and the data will be used for the above mentioned undergraduate project. Your participation will be rewarded by the "respondi AG" with 35 Mingle-Points (one Mingle-Point is worth €0.01).

Participation in this survey is completely voluntary. You have the right to decline to participate and withdraw from the research at any time, without any negative consequences, and without providing any reasons.

We believe there are no risks for you in connection with this research study. However, it must be mentioned that as this is an online study, possible privacy breaches may occur. We will minimise any risks by anonymising the data without reference to IP addresses and moving it to secure storage provided by the University of Twente. The data will be deleted after one year.

Study contact details for further information and if you are interested in the study results: Name: Milena Rund

Email:

O I confirm that I have read the information above and decide to participate.

Informed Consent (German Version)

Sehr geehrte Damen und Herren,

im Folgenden finden Sie eine Umfrage zu der Forschungsstudie "Wie Arbeiten von Zuhause, Einsamkeit und Unterstützung durch den Vorgesetzten das Wohlbefinden von Mitarbeitern beeinflusst: Eine Moderierte Mediationsanalyse Während der COVID-19-Pandemie". Diese Studie wird im Rahmen einer Bachelorarbeit an der Universität Twente im Fachbereich Verhaltens-, Management- und Sozialwissenschaften durchgeführt.

Das Ziel dieser Forschungsstudie ist, zu untersuchen, in wieweit Vorgesetzte einen Einfluss auf das Wohlbefinden und die Einsamkeit von Mitarbeiterinnen und Mitarbeitern am Arbeitsplatz während der COVID-19-Pandemie haben. Seit Beginn des ersten Lockdowns wurde eine Zunahme von Einsamkeit am Arbeitsplatz festgestellt. Daher ist es wichtig herauszufinden wie Einsamkeit von Arbeitnehmern verringert, und ihr Wohlbefinden gesteigert werden kann.

Das Ausfüllen des folgenden Fragebogens wird ca. 6 Minuten in Anspruch nehmen und die Daten werden für die oben genannte Bachelorarbeit verwendet. Ihre Teilnahme wird von der "respondi AG" mit 35 Mingle-Punkten belohnt (ein Mingle-Punkt ist 0,01 € wert).

Die Teilnahme an dieser Umfrage ist freiwillig. Sie haben jederzeit das Recht, die Teilnahme abzulehnen und aus der Untersuchung auszusteigen, ohne negative Konsequenzen und ohne Angabe von Gründen.

Wir gehen davon aus, dass es keine Risiken für Sie im Zusammenhang mit dieser Forschungsstudie gibt. Jedoch muss erwähnt werden, da es sich um eine Onlinestudie handelt, dass mögliche Datenschutzverletzungen auftreten können. Wir werden jegliche Risiken minimieren, indem wir die Daten ohne Hinweise auf IP-Adressen anonymisieren und sie in einen sicheren Speicher verschieben, der von der Universität Twente bereitgestellt wird. Die Daten werden nach einem Jahr gelöscht.

Kontaktdaten der Studie für weitere Informationen und bei Interesse an den Studienergebnissen:

Name: Milena Rund E-Mail-Adresse:

O Ich bestätige, dass ich die oben genannten Informationen gelesen habe und mich für die Teilnahme entscheide.