

## Being an accountant, cook, entertainer and teacher—all at the same time: Changes in employees' work and work-related well-being during the coronavirus (COVID-19) pandemic

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In March 2020, the world was hit by the coronavirus disease (COVID-19) pandemic which led to all-embracing measures to contain its spread. Most employees were forced to work from home and take care of their children because schools and daycares were closed. We present data from a research project in a large multinational organisation in the Netherlands with monthly quantitative measurements from January to May 2020 ( $N = 253\text{--}516$ ), enriched with qualitative data from participants' comments before and after telework had started. Growth curve modelling showed major changes in employees' work-related well-being reflected in decreasing work engagement and increasing job satisfaction. For work-non-work balance, workload and autonomy, cubic trends over time were found, reflecting initial declines during crisis onset (March/April) and recovery in May. Participants' additional remarks exemplify that employees struggled with fulfilling different roles simultaneously, developing new routines and managing boundaries between life domains. Moderation analyses demonstrated that demographic variables shaped time trends. The diverging trends in well-being indicators raise intriguing questions and show that close monitoring and fine-grained analyses are needed to arrive at a better understanding of the impact of the crisis across time and among different groups of employees.

**Keywords:** COVID-19; Autonomy; Work-life balance; Job satisfaction; Workload.

### CORONAVIRUS PANDEMIC: A GLOBAL FIELD EXPERIMENT ON FORCED TELEWORK

The ongoing coronavirus pandemic has had an immense impact on people's lives around the globe. Also, "work as we know it" is undergoing a major shift as the pandemic accelerates the already-existing trends of digitalization and flexibilization of work, accompanied by rising

levels of job insecurity, autonomy and demands for self-regulation as well as vanishing boundaries between life domains (Rudolph et al., 2020). For instance, in her editorial and summary of a collection of essays on the impact of the Sars-Cov-2/coronavirus pandemic on employees worldwide, Fouad (2020) describes career shocks, permanent changes to telework, rising global unemployment rates, demands for self-regulation and

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increases in anxiety, feelings of isolation and marginalisation for specific group of workers. In this paper, we present a unique perspective on changes in employees' perception of their working life when forced to switch to telework and simultaneously adjusting to the new "1.5-m society."

The findings we are reporting are derived from a longitudinal data collection we set up in January 2020 in the Netherlands. The initial goal of this data collection was to investigate the effects of a new leave policy that was introduced in a large Dutch company. The data collection entails monthly quantitative online surveys on work-related well-being, including sections for additional comments for March, April and May. After the first two survey waves in January and February, the coronavirus pandemic hit Europe with steeply rising infection and death rates and some countries' health care systems approaching their limits.

On March 15th, the Dutch prime minister announced that schools, day-care centres, restaurants and bars would be closed with immediate effect, and he urged all people to work from home whenever possible. On March 16th, the participants of our ongoing data collection (designed to investigate a new leave policy) transferred to working from home, and our study unintendedly turned into a field experiment on the effects of forced teleworking. In the Netherlands, the Government Response Stringency Index showed a very strict response regarding lockdown measures (including school and workplace closures, travel bans, restrictions on public gatherings), which were prolonged to the 28th of April. From May 6th on, first measures such as school closures were loosened in a stepwise fashion, yet forced telework in the company we analysed was prolonged the entire month of May. As our data collection started well before the pandemic hit and containment policies came into effect, we are able to investigate the development of work-related well-being across time: during pre-coronavirus times (January/February), during the onset (March/April) as well as during the first adaptation phase to a global health crisis and the associated lockdown measures and forced teleworking (April/May).

In this paper, we utilise a work stress perspective and investigate pandemic-related changes in work characteristics (i.e., workload and autonomy), work-related well-being (i.e., work-nonwork balance, work engagement and job satisfaction) and off-job experiences (i.e., autonomy need satisfaction). In addition, as the measures taken to contain the spreading of the virus might affect groups of employees differently (e.g., having children while daycares are closed), we explore whether demographic variables affect the development of work-related well-being over time. As the coronavirus pandemic represents a unique situation, which has only limited historical precursors in terms of worldwide impact, and data collection was planned without anticipation of such a pandemic, the present study is exploratory in nature.

However, we can ground our investigation in theories on work and stress to identify key variables of interest and tentatively formulate expectations about their development over time during the coronavirus pandemic.

### **CORONAVIRUS PANDEMIC AS STRESSOR: THEORETICAL FRAMEWORK AND EXPECTED DEVELOPMENTS**

The COVID-19 outbreak is an unprecedented scenario for humankind. For the present study, we use the theoretical perspective of work stress in order to identify key variables which should be affected by the coronavirus pandemic. The Job Demand-Resources model (JD-R; Bakker & Demerouti, 2016; Demerouti et al., 2001) highlights that psychological demands (such as workload) and resources (such as autonomy) are important in order to explain effects of the work situation on employees' strain and motivation. Thus, building on this model, it is crucial to examine changes in demands and resources, as well as changes in employees' work-related well-being. In addition, the transactional theory of stress and coping by Folkman and Lazarus's (1984) highlights how the coronavirus pandemic can indeed be considered to be stressful for employees. The central proposition of the transactional theory of stress and coping is that the experience of stress is a product of the transaction between a person and their environment. Individual appraisal processes (primary appraisal and secondary appraisal) determine whether an environmental stressor is experienced as threatening and, therefore, as stressful. Relying on Lazarus and Folkman's work, we argue that the COVID-19 outbreak is likely perceived as an important yet uncontrollable event, which increases the likelihood that the situation is experienced as harmful or threatening. Harm refers to a damage or loss that has already happened, whereas threat refers to the anticipation of harm. In this unclear, demanding and fearful situation, people's general well-being is presumably negatively affected, and this may also spill over to and become visible in the work domain.

Another influential theory that is relevant for our study is the conservation of resources model (COR; Hobfoll, 1989), which assumes that individuals are motivated to acquire, retain, protect and enhance their psychological resources (i.e., objects, personal characteristics, conditions or energies). Stress is experienced when resources are threatened or actually lost or a lack of gained resources occurs after an investment of resources. Hobfoll further assumes that individuals may reevaluate their resources and alter their interpretation of events and their consequences based on this evaluation. Building on COR, we propose that employees experience a threat of resource loss as well as a (potential) loss of important resources due to the coronavirus pandemic. Furthermore, employees may alter their interpretation of the changes

in their work demands, routines and processes, resulting in changes in work-related well-being.

From a theoretical perspective of work stress, it therefore is important to examine changes in work characteristics and work-related well-being. Additionally, the transactional stress and coping theory, as well as the COR theory, suggest that the coronavirus pandemic is likely to be experienced as a stressor.

### **CORONAVIRUS PANDEMIC AFFECTING WORK ENGAGEMENT AND JOB SATISFACTION**

The JD-R model (Demerouti et al., 2001) illustrates that positive work attitudes relate to important outcomes for the individual as well as the organisation, such as intention to quit and turnover, performance, withdrawal from work, and customer satisfaction (e.g., Christian et al., 2011). In the present study, we focus on *work engagement* and *job satisfaction* as two positive attitudinal outcomes, and we empirically address the following research question:

*Research question 1: How do (a) work engagement and (b) job satisfaction change over the course of the pandemic?*

Both outcomes are considered key outcomes in work psychology literature. Work engagement is defined as a positive and fulfilling work-related state of mind, characterised by feelings of vigour, dedication and absorption in one's work tasks (Schaufeli & Bakker, 2010). Job satisfaction describes "how people feel about their jobs and different aspects of their jobs. It is the extent to which people like (satisfaction) or dislike (dissatisfaction) their jobs" (Spector, 1997, p. 2). Concerning the expected effects of the pandemic on work engagement and job satisfaction, we draw upon research on telework. Empirical evidence on the effects of teleworking on well-being has often been inconclusive (for insightful overviews, see Boell et al., 2016) suggesting that telework is a very broad concept and can entail a wide range of different behaviours and policies. But as teleworking during the pandemic is not a free choice, occurs full-time (compared to only 1 or 2 days per week in earlier studies) and has happened in a way employees were ill-prepared for due to the suddenness of the pandemic, we assume that work engagement and job satisfaction decrease as a consequence. Seen through the lens of COR theory (Hobfoll, 1989), telework can threaten and impair important resources such as social support from colleagues and work routines (e.g., break routines) that secure employees' energy management over the day. We assume that during the coronavirus pandemic, employees feel less satisfied with their job because their job tasks have changed due to changeover processes when working from home or handling the crisis. Furthermore, new competencies have had to be developed

(particularly digital skills) which could temporarily lower the fit between employees' abilities and job demands. Summing up, we expect a decline in work engagement and job satisfaction after forced telework was introduced. However, in the longer term, skill development can be perceived as a welcome challenge involving adopting new work habits, broadening the (digital) horizon and taking one's job to a new digital era. Therefore, it is possible that initial declines in these outcomes will eventually stabilise or even improve once the initial shock and adaptation phase is over.

### **CORONAVIRUS PANDEMIC AFFECTING WORK-NON-WORK BALANCE AND WORKLOAD**

The coronavirus pandemic is likely to change the work environment in terms of job demands and job resources (Demerouti et al., 2001), because the prevention measures taken lead to considerable changes in the manner of working. A key area of impact of these changes is the *balance between life domains*, therefore, we empirically address the following research question:

*Research question 2: How does work–non-work balance change over the course of the onset of the pandemic?*

We expect that this balance may be seriously distorted. Working from home means that physical boundaries between working life and private life have vanished. Many people do not have a separate room for work and share the same living space with other people such as house mates, partners, children or elderly parents. It is likely that they become dissatisfied with their work–nonwork balance, defined as the fit between a person's desired integration of various roles and goals in different life domains and the actual realised combination (Syrek et al., 2011).

Another important variable that may drastically change under the condition of a major health crisis is workload. Accordingly, we formulated the following research question:

*Research Question 3: How does workload change over the course of the onset of the pandemic?*

*Workload* can be characterised as "being very busy" and encompasses quantitative (number of tasks, time pressure) and qualitative (difficulty of tasks) workload. Workload represents the "most frequently investigated stressor in occupational health psychology" (Widmer et al., 2012, p. 425). We propose that employees' workload increased during the coronavirus pandemic as employees had to adapt to the new work situation, develop new work routines (particularly when working from home, possibly in

addition to taking care of children), and learn to work with new ICT technology tools to communicate with leaders, colleagues and clients when working from home. However, it is also possible that workload decreased at first as certain work tasks could not be performed anymore or were cancelled, because employees did not have access to servers and programs from home, and with clients being in lockdown.

### CORONAVIRUS PANDEMIC AFFECTING AUTONOMY

Autonomy is a key resource in the workplace and is considered a basic human need (Deci & Ryan, 2000; Hackman & Oldham, 1976). Specifically, the JD-R model and the Job Characteristics Model highlight that autonomy is a central factor in the design of healthy jobs (Demerouti et al., 2001; Hackman & Oldham, 1976). Moreover, the satisfaction of the need for autonomy at work and in private life supports employees in achieving optimal functioning in different domains of life (Kujanpää et al., 2020). We presume that the pandemic has a major influence on autonomy and the degree to which people feel in control over their work and private life. In the present study, we address the following research question:

*Research question 4: How do (a) work scheduling autonomy and (b) autonomy need satisfaction change over the course of the onset of the pandemic?*

In light of the measures taken to prevent the spreading of the coronavirus, we expect distinct trends of autonomy at work and outside work. *Work scheduling autonomy* is a key element of autonomy at work, which is defined as “[...] the ability to exercise a degree of control over the content, timing, location, and performance of activities” (Hackman & Oldham, 1976; Mazmanian et al., 2013, p. 1). During telework, the timing of work becomes more flexible, and the physical distance to supervisors and team members may also lead to greater levels of perceived discretion regarding how to schedule one’s work.

*Autonomy need satisfaction* is regarded as a psychological need that is characterised by the desire for deciding one’s own course of actions (Deci & Ryan, 2000). We expect that autonomy need satisfaction may increase during the pandemic as employees may feel to have more choice and freedom to express themselves when teleworking. The possibility to work from home may also have lowered the necessity to obey certain office rules and norms (such as clean desk policies, business outfits, lunch break activities). Still, strict rules regarding socialising and spending one’s leisure time during the pandemic could also lead to the feeling of lower autonomy need satisfaction.

### EFFECTS OF THE PANDEMIC AMONG DIFFERENT GROUPS OF EMPLOYEES

The effects of the coronavirus pandemic and the associated containment measures on work-related well-being might be different for various groups of employees. More specifically, we address the following question:

*Research question 5: How are changes in well-being over the course of the onset of the pandemic related to (a) age, (b) gender and (c) living with children?*

Regarding age, we assume that restrictions on social gatherings (such as meeting friends, going to clubs or concerts) might affect younger employees more strongly than older employees because of their recreational habits, more active lifestyles or cramped housing situations. This assumption is supported by findings in an Austrian sample, indicating that the coronavirus pandemic and the lockdown are particularly stressful for younger adults (Pieh et al., 2020). Additionally, as medical studies suggest that morbidity rates and the risk of a severe course of the pandemic increase with age (Zhou et al., 2020), social restrictions and changes in the manner of working might be more likely to be perceived as unnecessary by younger compared to older employees. Furthermore, building on a study by Akkermans et al. (2020) one could speculate that the pandemic may be a career shock for younger employees at the beginning of their working life. Taken together, we expect that younger employees experienced a stronger decrease in well-being compared to older employees.

With regard to gender, statistics show that women contribute significantly more to unpaid or domestic work and suffer more often from the psychological effects of the pandemic (e.g., Bittman & Wajcman, 2000; Liu et al., 2020). Indeed, there is an ongoing debate on the consequences of forced telework combined with closed schools and daycares on gender equality (e.g., Arntz et al., 2020; Gausman & Langer, 2020). In a sample of dual-earner couples, Craig and Churchill (2020) show that mothers are more dissatisfied with their work–family balance than fathers, even though the differences found were rather small and gender gaps had narrowed. In addition, recent results show that women’s mental health is more adversely affected due to the coronavirus pandemic and lockdown measures compared to men’s mental health (Pieh et al., 2020). Taken together, we expect that women experienced a stronger decrease in well-being compared to men.

Forced telework in combination with closed schools and daycare centres might impose serious burdens on employees living with (small) children. A study by Spinelli et al. (2020) underlines the burden that is put on parents when they are in quarantine: balancing work and

private life, educating and taking care of their children, and coping with their own as well as their children's stress and anxiety. Taken together, we expect that employees who live with children in their household experienced a stronger decrease in well-being compared to employees living without children.

## METHODS

### Procedure and design

The data for the present study stem from a larger research project investigating the effects of introducing a new leave policy (i.e., unlimited paid time-off from work) at a Dutch multinational organisation. In this project, participants of a control group (without new leave policy) and an experimental group (with new leave policy) answered questionnaires regarding their vacation behaviour, work characteristics, work-related well-being and work-nonwork balance every month. At the end of each month, participants received an e-mail containing an invitation to fill in the questionnaire and a link to the questionnaire itself. After a couple of days, two reminders were sent, and the questionnaire was closed in the first week of the following month. Data for each person across the different time points were connected automatically and anonymously to the researchers via the questionnaire program. The study protocol is registered at the open science framework (<https://osf.io/kc3a9>) and received approval by the ethics committee of the Faculty of Economics and Business at the University of Groningen (the Netherlands). The research project is still ongoing. For the present study, we used the first five measurement points (January–May) in our analyses.

### Sample

We made use of all available data describing the development of key variables over time, regardless of whether participants provided sociodemographic data or not. Thus, the sample size differs across analyses.  $N = 637$  employees were invited to the first measurement in January. Of these,  $N = 516$  provided data at least once, resulting in 1721 measurement points, indicating a completion rate of 81%. The majority of participants were male (72%) and hold a university degree (49%). Participants were on average 43.2 years old ( $SD = 10.5$ ). Fifty-seven percent reported living together with children, and 80% of these children were under 17 years of age. Nearly, all participants were permanently employed (97%) and were working full-time (97% worked more than 30 hours per week). Participants worked for  $M = 13.4$  years ( $SD = 10.8$ ) for the

organisation, and  $M = 4.6$  years ( $SD = 4.8$ ) in the current position.

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all participants included in the study.

### Measures

On all measurement occasions, participants were asked to answer the items with reference to the last 4 weeks.

*Work engagement.* A six-item version of the Utrecht Work Engagement Scale (Schaufeli et al., 2006) was used to measure work engagement. Items had to be answered on a seven-point Likert scale, ranging from 1 (*never*) to 7 (*everyday*). An item example is “During the last four weeks at my job, I felt bursting with energy”. Cronbach's alpha ranged between .87 and .91 over the measurement occasions ( $M = .89$ ), McDonald's omega ranged between .87 and .91 ( $M = .89$ ).

*Job Satisfaction.* Using the approach of Van den Broeck et al. (2010), we measured job satisfaction with the question “How satisfied have you been with your job over the last four weeks?”; response options ranged from 1 (*very dissatisfied*) to 10 (*very satisfied*).

*Work–non-work balance.* We measured work–non-work balance with a shortened version of the scale developed by Syrek et al. (2011). Four items were rated on a 1 (*strongly disagree*) to 5 (*strongly agree*) Likert scale. An example item is “During the last four weeks I was meeting the requirements of both my work and my private life”. Cronbach's alpha ranged between .89 and .91 over the measurement occasions ( $M = .90$ ), McDonald's omega ranged between .89 and .92 ( $M = .90$ ).

*Workload.* We used three items developed by Spector and Jex (1998) to measure workload. An item example is “During the last four weeks I had to work very fast,” response options ranging from 1 (*never*) to 7 (*always*). Cronbach's alpha ranged between .88 and .91 over the measurement occasions ( $M = .89$ ), McDonald's omega ranged between .88 and .91 ( $M = .89$ ).

*Work scheduling autonomy.* Work scheduling autonomy was measured with the following item from the work design questionnaire (Morgeson & Humphrey, 2006): “During the last 4 weeks, my job allowed me to make my own decisions about how to schedule my work,” response options ranging from 1 (*never*) to 7 (*always*).

*Autonomy need satisfaction.* We used three need satisfaction items from the Basic Psychological Need Satisfaction and Frustration Scale (Chen et al., 2015). An item example is “During the last four weeks I've felt a sense of choice and freedom in the things I undertook,”

with response options ranging from 1 (*strongly disagree*) to 10 (*strongly agree*). Cronbach's alpha ranged between .87 and .90 over the measurement occasions ( $M = .88$ ), McDonald's omega ranged between .88 and .91 ( $M = .89$ ).

*Questions on experiences during the coronavirus pandemic.* At the start of the pandemic in March, we added some coronavirus specific questions to our questionnaires. We asked participants whether the pandemic affected their working life, whether they experienced a change in the structure of their day (e.g., waking hours, working times, lunch or coffee breaks) during the pandemic, whether the employees felt supported by the organisation, and whether they felt isolated from their working community. In an additional measurement in May, we asked team leaders about their leadership behaviour during the pandemic (e.g. whether they encouraged team members to take some time off during the crisis).

*Control variable.* In order to control for potential effects of the new leave policy, we included a control variable indicating group membership (0 = control group; 1 = intervention group) into all analyses.

## Analytical approach

Our data has a multilevel structure, where measurement points are nested in persons. We conducted multilevel growth curve analyses to investigate the development of the dependent variables over time. As is common for longitudinal research (Bliese & Ployhart, 2002), our data has missing values. However, a strength of random coefficient modelling (RCM) framework is that missing data does not pose a particular problem in terms of estimation; the parameter estimates are based on all available information (Bliese & Ployhart, 2002). Analyses were conducted in R, using the nlme package. We followed Bliese and Ployhart's (2002) suggestion and started our analysis by investigating unconditional means models (null models). The intraclass correlations (ICCs) ranged from .26 (autonomy need satisfaction) to .66 (work engagement), indicating that a multilevel approach is warranted. In the second step of the analysis, we investigated whether a linear, quadratic and/or cubic time trend fitted the data. Time trends were specified with a polynomial function (using the poly function in R), ensuring an independent test of the time effects. These time trends allowed us to investigate not only whether variables increased or decreased over time, but also whether trends steepened or reversed. In the third step, we investigated for the highest order slope (i.e. linear, quadratic or cubic) of the time effect that significantly fitted the data if there was potential for cross-level moderators. For all analyses, the models specifying random slopes of the effect of time fitted the data significantly better compared to random intercept and fixed

slopes models. In the last step of the analyses, we explored whether gender, age and living with children acted as cross-level moderators on the relationship between time and our dependent variables.

## RESULTS

Table 1 shows intercorrelations between variables.

### Questions on experiences during the coronavirus pandemic

We asked employees to what extent the coronavirus pandemic affected their working life during March, April and May on a scale from 1 (*not at all*) to 4 (*to a great extent*). Results show that in March, 44% employees answered "to a great extent." The share of employees who felt affected significantly decreased from March ( $M = 3.72$ ,  $SD = 0.58$ ) to April (36%,  $M = 3.56$ ,  $SD = 0.63$ ) and May (31%,  $M = 3.48$ ,  $SD = .79$ ) ( $F_{(1,199)} = 23.19$ ,  $p < .001$ ).

Responding to the question about how much the structure of their day has changed due to the pandemic (e.g., waking hours, working times, lunch or coffee breaks), the majority of employees reported that they developed new work routines in March (45%), April (47%) and May (52%), while one third of employees stuck to the same routines (33% in March, 36% in April and May). While in March 22% of employees reported they did not have any routines at the moment and that their schedules changed from day to day, the number decreased in April (17%) and May (12%).

Overall, employees felt supported by their organisation (5-point Likert scale), but perceived support as having significantly decreased during the coronavirus pandemic (March  $M = 3.39$ ,  $SD = 1.12$ ; April  $M = 3.20$ ,  $SD = 1.02$ ; May  $M = 3.15$ ,  $SD = 1.10$ ,  $F_{(1,195)} = 4.07$ ,  $p < .05$ ).

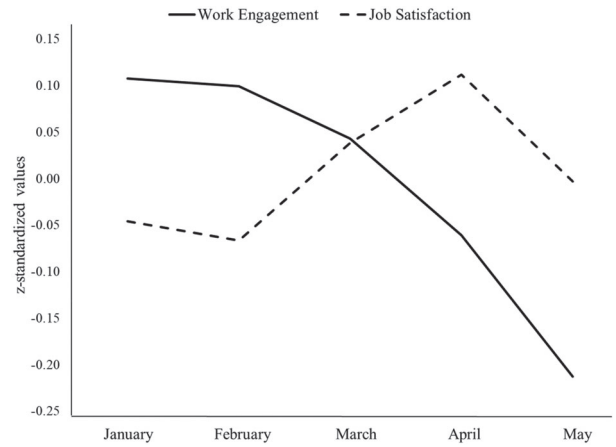
We furthermore asked employees if they felt isolated from their work community on a 5-point Likert scale. Results show that employees felt most isolated in March, but less so in April and May (March  $M = 3.72$ ,  $SD = 0.58$ ; April  $M = 3.59$ ,  $SD = 0.63$ ; May  $M = 3.48$ ,  $SD = 0.79$ ,  $F_{(1,195)} = 14.54$ ,  $p < .001$ ).

In addition, we asked 37 team leaders in May which behaviours they engaged in during the last month to help their team deal with the coronavirus pandemic. Most leads (87%) showed understanding if personal situations conflicted with work duties, 81% also checked in with their teams and individual team members more frequently than usual, and 65% encouraged team members to take time off from work. Only 22% communicated lower expectations about how much can be done in a day, 19% reduced the workload of their team or individual workers, and 16% communicated lower performance requirements.

**TABLE 1**  
Means, standard deviations, reliabilities and correlations between study variables

Variable	M	SD	$\alpha/\Omega$	1	2	3	4	5	6	7	8	9	10	Time linear	Time quadratic	Time cubic
1. Gender	0.73	0.44	—	—												
2. Age	43.16	10.47	—	.08	—											
3. Children	0.56	0.50	—	.01	.18	—										
4. Group	0.50	0.50	—	-.09	-.17	.03	—									
5. Work-nonwork balance	3.40	0.85	.90/.90	.12	.13	-.13	-.10	—	.32	.32	-.41	.31	.40	-.01	.01	.02
6. Work engagement	3.77	0.97	.89/.89	.06	-.03	.01	-.04	.38	—	.24	-.04	.55	.31	-.11	-.12	-.12
7. Work scheduling autonomy	5.30	1.20	—	.14	.07	.10	-.20	.39	.36	—	-.24	.28	.17	.02	.04	.04
8. Workload	4.19	1.11	.89/.89	-.14	-.10	.07	.18	-.43	-.07	-.20	—	-.13	-.09	.01	.03	.04
9. Job satisfaction	7.32	1.78	—	.02	.13	.04	-.06	.40	.66	.34	-.12	—	.19	.03	.02	.02
10. Autonomy satisfaction	3.56	0.82	.88/.89	.08	-.01	-.11	-.05	.49	.41	.28	-.06	.28	—	-.16	-.14	-.11

Note. Cronbach's alpha for month-level variables are averaged over measurement occasions. Gender: 0 = female, 1 = male; Children: 0 = living without children, 1 = living with children; Group: 0 = control group, 1 = intervention group. Correlations below the diagonal are person-level correlations ( $N = 348-516$ ) with correlations  $r \geq .10$  being significant at  $p < .05$  and  $r \geq .12$  being significant at  $p < .01$ . Correlations above the diagonal are month-level correlations ( $N = 1382-1721$ ) with correlations  $r \geq .09$  being significant at  $p < .01$ .

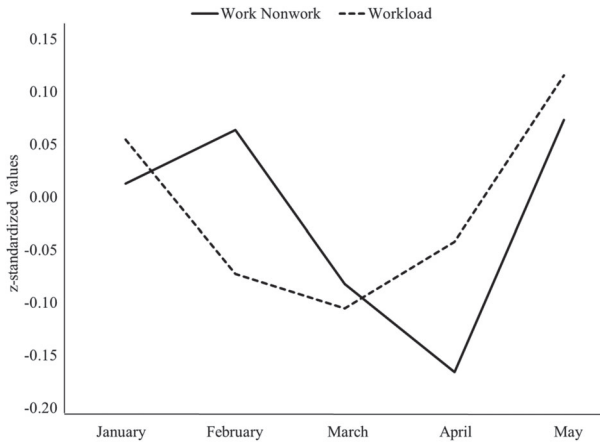


**Figure 1.** Illustrates the time trajectories of work engagement (significant quadratic time trend) and job satisfaction (significant cubic time trend).

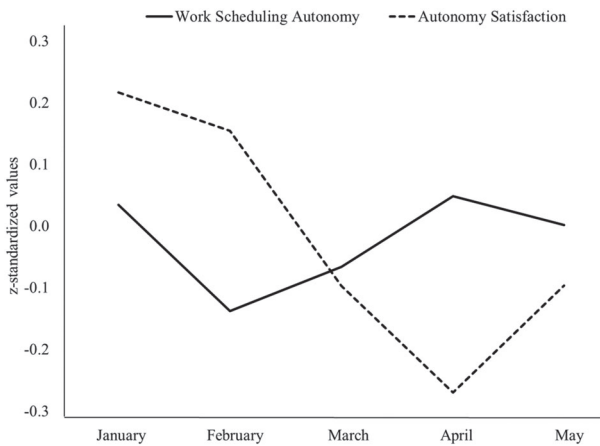
**Development over time**

The results of our multilevel growth curve analyses showed a significant linear and quadratic time trend ( $\gamma_{\text{linear}} = -4.25, t(1162) = -6.36, p < .01$ ;  $\gamma_{\text{quadratic}} = -1.56, t(1162) = -2.72, p < .01$ ) for work engagement, and a significant linear and cubic time trend ( $\gamma_{\text{linear}} = 2.95, t(1161) = 2.21, p < .01$ ;  $\gamma_{\text{cubic}} = -3.20, t(1161) = -2.72, p < .01$ ) for job satisfaction. Furthermore, we observed a significant quadratic and cubic time trend for work-non-work balance ( $\gamma_{\text{quadratic}} = 1.58, t(1185) = 2.44, p < .05$ ;  $\gamma_{\text{cubic}} = 2.54, t(1185) = 4.14, p < .01$ ). Workload showed a significant quadratic time trend only ( $\gamma_{\text{quadratic}} = 3.62, t(1197) = 4.65, p < .01$ ). Results showed a significant linear, quadratic and cubic time trend for work scheduling autonomy ( $\gamma_{\text{quadratic}} = 2.04, t(1202) = 2.52, p < .05$ ;  $\gamma_{\text{cubic}} = -2.83, t(1202) = -3.54, p < .01$ ) and autonomy need satisfaction ( $\gamma_{\text{linear}} = -5.24, t(1157) = -6.84, p < .01$ ;  $\gamma_{\text{quadratic}} = 1.92, t(1157) = 2.79, p < .01$ ;  $\gamma_{\text{cubic}} = 2.49, t(1157) = 3.70, p < .01$ ). Figures 1 to 3 illustrate the trajectories over time.

Taken together, the pattern of results is partly in line with the expected decline in work engagement (Research Question 1a), work-non-work balance (Research Question 2), autonomy satisfaction (Research Question 4b), and an increase in work scheduling autonomy (Research Question 4a). Additionally, the time trajectory of workload (Research Question 3) showed a decrease at the beginning of the coronavirus pandemic, followed by an increase when governmental prevention measures were relaxed. However, the development over time is more dynamic than expected, as we also observe quadratic and cubic time trends. Additionally, not all trends observed fitted our expectations raised in the theory section. Specifically, for job satisfaction (Research Question 1b), we observe an increase at the beginning of the coronavirus



**Figure 2.** Illustrates the time trajectories of work-nonwork balance (significant cubic time trend) and workload (significant quadratic time trend).

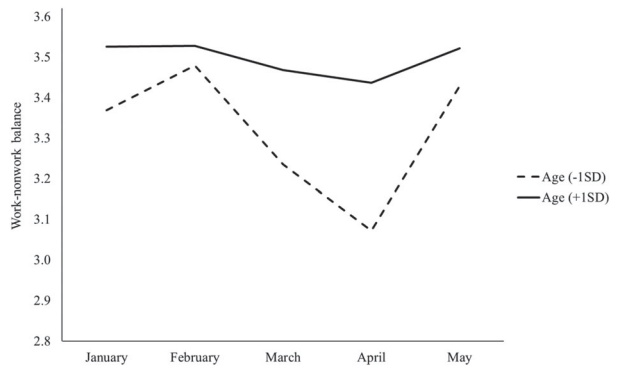


**Figure 3.** Illustrates the time trajectories of work scheduling autonomy (significant cubic time trend) and autonomy need satisfaction (significant cubic time trend).

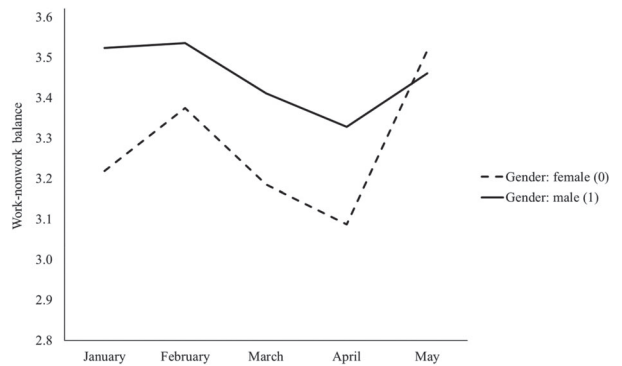
pandemic, followed by a decline when governmental prevention measures were relaxed.

**Cross-Level moderation effects**

We explored whether age, gender or living with children affected the time trajectories of the dependent variables. Age and gender moderated the cubic relationship between time and work-nonwork balance ( $\gamma_{\text{time(cubic)*age}} = -0.17, t(1015) = -3.02, p < .01$ ;  $\gamma_{\text{time(cubic)*gender}} = -2.71, t(1008) = -1.98, p < .05$ ). Older employees (+1SD) did not experience a decrease of work–non-work balance, while younger employees (–1SD) experienced a decrease during the crisis, followed by a return to baseline levels in May (Figure 4). This pattern of results fitted our speculations regarding Research Question 5a. Figure 5 shows that female employees had an overall lower experience of work–non-work balance compared



**Figure 4.** Illustrates the time trajectory of work-nonwork balance for younger (–1 SD) and older (+1 SD) employees.

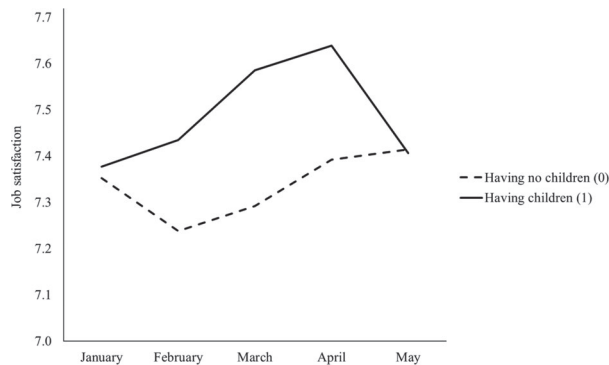


**Figure 5.** Illustrates the time trajectory of work-nonwork balance for women and men.

to male employees. During the crisis, female employees also experienced a stronger decrease in work–non-work balance than their male colleagues. However, from April to May, female employees experienced a higher increase in work–non-work balance than their male colleagues, which even exceeded their pre-crisis level. This also is in line with our speculations regarding Research Question 5b. However, the increase in work–non-work balance for women that exceeds the pre-crisis level was not expected.

We also observed a significant moderator effect of living with children yes (1) versus no (0) on the quadratic relationship between time and job satisfaction ( $\gamma_{\text{time(quadratic)*children}} = -4.25, t(968) = -2.01, p < .05$ ). Employees living with children experienced an increase in job satisfaction before the onset of the coronavirus pandemic and during the pandemic until April, and a decrease from April to May; on the other hand, job satisfaction was overall lower for employees living without children, but increased somewhat from February onwards and reached the same levels as job satisfaction of employees living with children in May (Figure 6). This pattern of results is opposite to our speculations regarding Research Question 5c (i.e., expected decrease in work-related well-being in employees living with children). It should be noted, however, that the overall





**Figure 6.** Illustrates the time trajectory of job satisfaction for employees living with children and employees not living with children.

model for job satisfaction showed a significant cubic time trend. Accordingly, this moderator effect on the quadratic time trend should be interpreted with caution.

## DISCUSSION

The present study gives a unique view of the effects of the coronavirus pandemic on employees who were forced to start working from home. Our longitudinal data collection started well before the onset of the crisis in Europe and affords us a rare view of the developments in employees' work-related well-being during the first weeks of the crisis as well as in the months after the onset of the crisis, showing whether and how employees have adapted to a crisis affecting all life domains.

We based our explorations on theoretical ideas about stress and suggested that (i) based on the JD-R model the coronavirus pandemic might result in changes of working conditions such as workload and autonomy, and (ii) based on the transactional stress theory and the COR theory, the coronavirus pandemic can be viewed as a stressful experience for employees because of missing coping experiences and the potential for resource loss. Overall, the pattern of results revealed a complex picture regarding the development of key variables. We observed that the immediate effects of the coronavirus pandemic related to reduced workload and increased work scheduling autonomy. However, the development over time also suggests a strong increase of workload, and a reduction of work-scheduling autonomy when the pandemic-related changes decreased, calling into question whether long-term positive developments can be expected. With regard to work–non-work balance and work engagement, the suggested stress effect can be observed, as we see a decrease at the onset of the crisis. However, the increase of job satisfaction at the beginning of the coronavirus pandemic (see Research Question 1b), and the increase of work–non-work balance when prevention measures were relaxed, point to possible positive changes due to the crisis. In order to provide an in-depth

discussion of the developmental patterns observed, we discuss each result in turn and connect the quantitative observations with qualitative comments of the employees, which they had stated in the open questions section.

## Work engagement and job satisfaction

Results show that work engagement (Research Question 1a) was rather stable from January to February, but progressively declined thereafter (Figure 1). The need to develop new work routines that many participants have reported could have especially hindered the experience of being work engaged. On the other hand, and contrary to expectations, job satisfaction (Research Question 1b) increased during the pandemic (March to April), and showed a decrease only from April to May. This implies that feeling enthusiastic, vigorous and dedicated at work is not key to (or congruent with) employees' job satisfaction during the crisis. The increase in job satisfaction until April could be explained by employees feeling supported and informed by their organisation. Also, participants reported that they experienced fewer interruptions and saw the positive sides of the crisis in the long term as reported in the comments section of our questionnaire. As one participant put it “The company became more digital, and finally we see that it is possible to reduce the number of meetings, cancel business trips and do skype calls. As a result: no need for business trip costs, reduced amount of travels, etc.” However, seeing the positive sides of the crisis (in terms of job design) did not seem to prevent the decline in job satisfaction we saw after April.

When looking at the development of job satisfaction over time for employees living with or without children (see Figure 6, and Research Question 5c), we see that these groups differed considerably. Employees living without children experienced a small decline in job satisfaction at the beginning of the year but returned to their beginning-of-the-year levels during the pandemic. Job satisfaction of employees living with children, however, was on the rise since beginning of the year, followed by a sudden decrease after April. We cautiously conclude that potential negative effects of the lockdown measures are reflected in job satisfaction with a certain time lag and for employees living with children only. The decrease of job satisfaction in May for employees with children might reflect a “gloomy perspective” of having to go back to work after finally adapting and benefitting from the new work situation of forced telework. When speculating about this pattern of results, it seems that the crisis helped with bringing issues regarding work–family conflicts to the attention of the organisation, which was met with initial sympathy by the team leads, of which 87% reported to show understanding if personal situations conflicted with work duties.

## Workload

Results indicate that workload (Research Question 3) decreased at the beginning of the year (January–March), but then steadily increased with the onset of forced telework (March–May). Many studies show that workload is one of the strongest predictors of insufficient recovery from work (e.g., Kinnunen et al., 2011). Specifically, high workload increases employees' general level of arousal and impedes recovery processes after work as employees keep thinking about unfinished work tasks and anticipate upcoming tasks, keeping work-related issues cognitively present (Syrek & Antoni, 2014). Insufficient recovery can have negative long-term consequences for health, well-being and working ability (e.g., van Amelsvoort et al., 2003).

In our study, workload was high in January, decreased in February and reached its lowest levels in March when the pandemic hit. It seems likely that the company put certain projects on hold and that some employees were not able to work for at least a few days, due to practical issues (e.g., lack of hardware and software to conduct work from home). In April, practical problems were solved, people resumed their work and projects started again, leading to rising workload. It is interesting to note that the development of job satisfaction and work engagement do not seem to follow the u-shaped time trend in workload. This suggests that the relationship between workload and work outcomes is more complex (e.g., non-linear, time-lagged) or moderated by third variables (see for instance, González-Morales & Neves, 2015; LePine et al., 2005).

## Work–non-work balance

The decrease in work–non-work balance (Figure 2) is in line with Schieman et al.'s (2020) expectations, building on border and boundary theories, that increased work–home role integration during the pandemic also increased work–non-work conflicts. This result is also reflected in participants' difficulties to fulfil expectations and duties from work and private life domains, reflected in comments such as “Work life balance became much more challenging, without day-care available it makes it quite complex and stressful sometimes to meet work expectations and take care of a toddler.” “During the day, I am a nanny and teacher and my girlfriend as well and we take turns. When she is off work, I try to serve some clients. During the day, I am not able to work with these monkeys around me. I have never missed my workplace like this before.” Also, participants addressed the challenge to transform space at home into an appropriate office (space, ergonomics, silence): “I had to remodel my office space to make it more comfortable for the long-term, and it's still not the most suitable space.” Moreover, recovery from

work was more difficult for some of the participants in the beginning of the crisis: “It feels hard to take breaks regularly or to do some other activity to disconnect from work a little bit.” However, employees seemed to cope with the new situation rather quickly as work–non-work balance strongly increased after April. Participants described their situation as “being a teacher in the morning, an employee in the afternoon,” “next to work, I am also fulfilling the role of an entertainer.” It became apparent that employees were able to improve balancing their roles, becoming “a teleworking mother who is also a teacher, employee and mom.” Or stating: “I enjoy working from home, because I can more easily combine work and private life. I can bring the kids to school now, attend activities at school, run some errands, cook.” Relying on Folkman and Lazarus's (1984) theory, we assume that employees developed coping strategies to deal with the new situation. Some people even seem to experience juggling different roles as an enrichment of life.

Particularly, women experienced a decrease in work–non-work balance in the beginning of the crisis (see Figure 5). This might be explained by the fact that female employees often experience higher work-related stress due to raised work standards (Schieman et al., 2020). We also observed a stronger effect of the coronavirus pandemic on work–non-work balance for younger employees (Figure 4). This might reflect that younger employees struggled more at the beginning of the crisis to adjust to the forced home office situation. This might be related to the fact that younger employees may lack some routines and well-established networks with colleagues to fall back on. Another reason may be that younger employees compared to older employees are more likely to have to care for smaller children. However, whether or not employees lived with children in their household somewhat surprisingly did not influence how the development of work–non-work-balance unfolded over time.

## Autonomy

Results regarding the time trajectory of work scheduling autonomy and autonomy need satisfaction illustrate interesting, somewhat-opposing trends. While work scheduling autonomy increased from February onwards, but decreased from April to May, autonomy need satisfaction steadily decreased until April, but increased from April to May (Figure 3). This development probably reflects the strict governmental measures which greatly impacted people's private life, and the easing of measures to contain the pandemic in May.

The increase in work scheduling autonomy is reflected in participants' comments such as “These past 4 weeks during the lockdown made it apparent that people function better when they can set their own schedules. I feel it

increased my productivity.” Participants also experienced more flexibility: “I do like to work from home, because I can work in the silent environment without disruptions, I can focus on my tasks and deliver even faster, I feel a bit of freedom but at the same time more responsibility.” Thus, it seems that the coronavirus pandemic also had some positive impacts on working life by increasing employees’ sense of work scheduling autonomy. A challenging situation may emerge for organisations when forced telework is over and employees return to their offices, because employees might expect more autonomy at their work, with organisations being required to provide it in order to meet employees’ expectations.

### Limitations and suggestions for future research

The sample of the present study is not representative for the entire Dutch working population but shows the development over time for employees in the Dutch financial sector. As various occupations are differently affected by the coronavirus pandemic (e.g., service sector, gastronomy), and countries introduced different containment measures during the crisis, the results should be interpreted against this background. Additionally, the data for the present study was not assessed with the goal of studying the effects of the coronavirus pandemic but is rather an ongoing data collection effort to study the impact of a new leave policy. Therefore, the measures used were not specifically selected to capture the effects of the coronavirus crisis. As is common in longitudinal data, we have missing values in our data set. Although missing values do not pose a problem with regard to estimation within our analytical framework, we acknowledge that other problems in terms of statistical power and representativeness might still exist.

Moreover, some potentially relevant variables have not been assessed. For instance, research has demonstrated that personality traits such as neuroticism can aggravate the impact of an event, whereas extroverted individuals might be able to generate a wider social support system compared to introverts, helping them through a crisis (e.g., Swickert et al., 2002). Resilience and self-efficacy may also serve as buffers which can protect mental health (e.g., Kimhi et al., 2020). Future studies could examine these protective factors in more detail and could identify, particularly, those traits which might be shaped in interventions.

Finally, as has been stated, this study has been conducted in the Netherlands. Building on Guan et al.’s (2020) work on career challenges during the coronavirus pandemic, it is important to interpret findings against the background of the cultural orientations in the sample as these influence how stressors and choices of coping strategies are perceived. For example, the cultural context may determine how much personal discretion to arrange work and home is available.

In addition to cultural orientation, findings may be different in countries with different pandemic measures (e.g., less strict guidelines or a stricter lockdown even preventing people from leaving their home) or different economies and lower levels of digitalization. The Dutch economy and our sample consist of a large share of knowledge workers who are used to working from home for part of their working week. Internationally, the Netherlands are rather advanced in teleworking initiatives, potentially smoothing the transition to telework or hybrid working during this crisis. Thus, the impact of the forced transition to telework observed in our data may be more pronounced in different countries.

### CONCLUSIONS

Our study offers a unique glimpse into the impact of the coronavirus pandemic on employees’ well-being. With our monthly measurement design, we can offer rare insights into the effects of the crisis that include pre-crisis measures and do not rely on retrospective and potentially biased reports collected after the onset of the crisis.

A simple take-home message is difficult to extrapolate from the complex pattern of results. However, what we can conclude from the results and qualitative comments from employees is that work-related well-being indicators are differently affected by the pandemic. During the crisis, and with rising levels of job insecurity, people may be grateful for having a job, resulting in high job satisfaction, while they may at the same time feel less engaged and energised at work. Our results also show that women and younger workers are more seriously affected by the crisis, pointing to the need to better examine these differential effects and to develop targeted interventions to address the specific needs of specific groups. It is likely that broad, “one-size-fits-all” interventions would not alleviate the struggles many workers face at the moment.

The coronavirus pandemic and forced telework required personal resources to help employees cope with work and home demands, underlining the importance of organisational support and guidelines. Our results can be interpreted from the perspective of coping and adapting to stressful situations at work, emphasising the importance of developing routines and rituals to handle work and home demands. More research is needed to understand the impact of forced telework as previous studies have mainly focused on voluntary telework that is usually only used for part of the working week. Building on our empirical results and qualitative comments from employees, it seems that once employees have adapted to the initial stress of the pandemic and to forced telework, they may also benefit in terms of enriched work and well-being. Harnessing and increasing these positive

effects is essential, because we expect that telework is here to stay and hybrid work will become the future.

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