Cognitive crafting and work engagement: A study among remote and frontline health care workers during the COVID-19 pandemic

Indy Wijngaards • Florie R. Pronk • Arnold B. Bakker • Martijn J. Burger

Background: The outbreak of COVID-19 has led to a profound change in the organization of work in the health care sector. As frontline health care workers are essential in battling the pandemic and their work is appreciated in society, we argue that health care workers who are forced to work from home are likely to perceive their jobs as less meaningful, which in turn may negatively affect their engagement at work. Cognitive crafting, or the altering of the perceptions one has about their tasks and relationships with the aim to enhance the meaningfulness of work, may be a fruitful cognitive strategy to counter the problems remote health care workers face.
Purpose: The primary purpose was to study the relationship between cognitive crafting, working from home (WFH), and work engagement.
Methodology: We collected cross-sectional survey data between May 7 and June 2, 2020, from a single hospital in the Netherlands (*n* = 278). The central hypothesis was tested using multiple regression analysis.
Results: The relationship between cognitive crafting and work engagement was moderated by WFH, such that the relationship is more positive for health care workers who work from home permanently since the start of the COVID-19 pandemic than for frontline workers and workers who work partially from home.
Conclusion: Our findings are consistent with previous research on cognitive crafting. We conclude that cognitive crafting is an interesting cognitive strategy to stay engaged for health care workers who are mandated into WFH.
Practice Implications: We advise organizations to provide remote workers virtual group trainings that promote cognitive crafting and expose them to testimonies of people who are positively affected by their work. More generally, we recommend organizations to engage in effective top-down work design and foster a climate for cognitive as well as behavioral job crafting strategies.

Key words: Cognitive crafting, COVID-19, job crafting, work engagement, working from home

The outbreak of the coronavirus disease 2019 (COVID-19) continues to have a profound impact on industries across the globe (Kniffin et al., 2020). One of the most affected industries is the health care sector. Most notably, nurses, doctors, and others vital for high-quality health care (e.g., cleaners, receptionists) have been coined "essential workers" (Kniffin et al., 2020) and work excessive long hours with limited breaks (International Labour Organization, 2020). Despite the strain on their well-being (Pappa et al., 2020), frontline health care workers are aware of the essential role they play in safeguarding public health, as illustrated by the return of retired health care workers to the frontline

(ABC, 2020) and evidence highlighting that health care workers feel it is their duty to battle COVID-19 (Liu et al., 2020). Meanwhile, they receive more tokens of appreciation from society than usual (Hennekam et al., 2020), for instance, public applause and singing, television commercials, and calls for better compensation.

A group of health care workers rarely put in the spotlight are those not labeled "essential" in battling the pandemic: workers in support functions such as planning, administration, management, human resources (HR), finance, information technology, and legal. A large share of support workers was instructed to (partially) work from home to minimize infection risks (Kniffin et al., 2020). Although research suggests that these workers experience less emotional exhaustion and sleep problems than workers who directly work with COVID-19 patients (Van Roekel et al., 2021), working from home (WFH) during the pandemic does not come without costs. The American Centers for Disease Control and Prevention has included "feelings that you are not contributing enough to work or guilt about not being on the frontline" as a common work-related stressor during this pandemic (Centers for Disease Control and Prevention, 2020). Indeed, a recent cross-national study confirmed that the perceived loss of job meaningfulness is one of the greatest disadvantages

Indy Wijngaards, MSc, Erasmus Happiness Economics Research Organization and Erasmus School of Health & Policy Management, Erasmus University Rotterdam, the Netherlands. E-mail: wijngaards@ese.eur.nl.
Florie R. Pronk, MSc, Erasmus Happiness Economics Research Organization, Erasmus University Rotterdam, the Netherlands.
Arnold B. Bakker, PhD, Center of Excellence for Positive Organizational Psychology, Erasmus University Rotterdam, the Netherlands.
Martijn J. Burger, PhD, Erasmus Happiness Economics Research Organization and Erasmus School of Economics, Erasmus University Rotterdam, the Netherlands.

of being required to WFH (Ipsen et al., 2021). This problem of meaningfulness seems especially pertinent for remote workers in health care, as frontline health care workers—their reference group for evaluating their jobs' value—play an important role in patient care *and* are publicly appraised (cf. Festinger, 1954). As the perceived significance and meaning of work are favorably linked to individuals' engagement at work (Van Wingerden et al., 2017, 2018), "a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption" (Schaufeli et al., 2002, p. 74), being required to WFH could pose a significant problem to the engagement of health care workers.

The possibility that remote health care workers perceive that their jobs are less visible or meaningful than those of frontline health care workers does not mean that their jobs are unimportant (Bapuji et al., 2020). For example, workers in support functions play an essential role in the development and implementation of practices that promote frontline health care workers' mental and physical health (Kilroy et al., 2017). In light of this, we hypothesize that cognitive crafting may be a relevant strategy for remote workers to stay engaged at work. Cognitive crafting refers to the altering of the perceptions one has about their tasks and relationships with the aim to enhance the meaningfulness of work (e.g., directing attention to the most meaningful aspects of the job; Slemp & Vella-Brodrick, 2013; Zhang & Parker, 2019). Even though the literature on cognitive crafting is still in its infancy (Zhang & Parker, 2019), evidence suggests that it is a good predictor of work engagement (e.g., Hu et al., 2020; Iida et al., 2021) and an especially relevant cognitive strategy for workers whose work meaningfulness is at risk (Bindl et al., 2019; Buonocore et al., 2020; Geldenhuys et al., 2020). In accordance, we further hypothesize that cognitive crafting is less strongly related to work engagement for frontline health care workers, because frontline health care workers have probably experienced an increase in perceived professional prestige and socially compare "better."

By testing these assumptions on data collected in a Dutch health care setting during the COVID-19 pandemic, this study makes several contributions. First of all, our study contributes to an emerging literature on individualized mental health interventions in times of COVID-19. Specifically, we empirically test the claim that job crafting is a fruitful approach to help workers maintain adequate levels of well-being at work in these times of crisis (Kniffin et al., 2020). Second, in light of the increased attention for behavioral forms of job crafting, that is, task and relational crafting (Rudolph et al., 2017; Zhang & Parker, 2019) and crafting job demands and resources (Tims et al., 2012), our study addresses the dearth of studies on cognitive crafting. Third, the results from this study could be helpful for organizations that struggle with declined engagement levels in their remote workforces since the outbreak of COVID-19, as cognitive crafting can be taught and cognitive crafting interventions have shown to increase work engagement (Sakuraya et al., 2016, 2020). The practical implications are not limited to health care organizations: More industries may be dealing with a sudden division between remote workers and workers who are required to work on the frontline (e.g., public transport, supermarkets).

Theoretical Background
Top-Down Work Design and Bottom-Up Job Crafting

Over the past decades, scholars have developed a vast array of theories and constructs on the topic of work design or "the content and organization of one's work tasks, activities, relationships, and responsibilities" (Parker, 2014, p. 662). Most research has adopted a top-down approach of job design, investigating how organizations can modify jobs or specific tasks in ways that advance the goals of organizations and workers (Parker, 2014). For example, an organization's HR department may improve scheduling procedures to avoid work overload of certain groups of workers, an information technology director may invest in new software to reduce administrative hassles of the entire workforce, or a line manager may organize regular team building activities to facilitate social support among colleagues.

However, with the increasing diversity in the workforce and increasing levels of uncertainty and complexity in modern workplaces, it has become increasingly difficult to centrally design task descriptions that fit all employees for an extended time (Berg et al., 2010). These developments gave rise to the bottom-up approach of job crafting or "the physical and cognitive changes individuals make in the task or relational boundaries of their work" (Wrzesniewski & Dutton, 2001, p. 179). In the literature, job crafting behaviors are often categorized into three groups: task crafting, relational crafting, and cognitive crafting (Berg et al., 2013; Slemp & Vella-Brodrick, 2013; Wrzesniewski & Dutton, 2001; Zhang & Parker, 2019). Task crafting encompasses altering aspects of the boundaries of tasks by changing the number, scope, or kind of job tasks performed at work, for example, taking on other tasks to make the job more challenging. Relational crafting concerns changing aspects of the job that involve social relationships employees have at work, for example, intensifying the contact with patients to satisfy the need for human connection. As mentioned before, cognitive crafting refers to the altering of the perceptions one has about their tasks and relationships with the aim to enhance the meaningfulness of work, for example, directing attention to the most meaningful aspects of the job.

Cognitive Crafting and Its Role in the Job Crafting Process

In contrast to relational and task crafting, cognitive crafting is a mental strategy and not a behavioral form of job crafting. Cognitive crafting does not change any objective characteristic of the job and thus solely takes place inside the mind of people. As all job crafting initiatives start with a cognitive evaluation of the characteristics of the job and person job-fit, cognitive crafting can be considered the first step in the job crafting process (Melo et al., 2021). The idea that cognitive crafting is a prerequisite for behavioral crafting does not mean that all cognitive crafting activities have behavioral consequences. In certain situations, workers may be unable

to resort to behavioral crafting or find it easier to handle their jobs by solely framing it in a different way (Melo et al., 2021; Zhang & Parker, 2019).

The literature has distinguished three kinds of cognitive crafting strategies (Berg et al., 2013). First, workers can cultivate meaningfulness by reminding themselves of the holistic purpose of their jobs, rather than thinking of their jobs as a set of distinct tasks and relationships (*expanding perceptions*). This approach helps workers to see the eventual impact of their work and its beneficiaries. For example, a hospital janitor could frame his job as supporting the recovery of ill people rather than just cleaning the hospital building. Second, workers could actively focus on the aspects of work that are most meaningful or significant to them (*focusing perceptions*). For example, a hospital receptionist who perceives face-to-face patient contact as most enjoyable work task and who actively dislikes administrative work may reframe the unpleasant paperwork as an indispensable means to deliver high-quality health care. Third, workers can increase the meaningfulness of their work tasks by making mental linkages between specific tasks and relationships, on the one hand, and interests, outcomes, or parts of their identities that are meaningful to them, on the other hand (*linking perceptions*). For example, an administrative assistant with a passion for stand-up comedy could make a mental link between the experience of performing comedy and the moments during the working day spent cracking jokes to connect with patients and colleagues.

In this study, we focus on the expanding perceptions strategy. We do this for two reasons. First, the expanding perceptions strategy seems most relevant when health care workers who work remotely engage in social comparisons with their frontline colleagues. After all, realizing the overarching meaning of the job is more difficult for remote health care workers, as, compared to their colleagues on the frontline, their contribution to the functioning of the organization is less apparent. Second, the expanding perceptions strategy classifies as an approach crafting strategy (Lazazzara et al., 2020). Research has shown that approach crafting strategies relate more favorably to work outcomes, such as work engagement, job strain, and performance, than avoidance crafting strategies (Rudolph et al., 2017).

Antecedents and Consequences of Cognitive Job Crafting

Research has found that for (cognitive) job crafting to occur, workers need to have the ability, motivation, and opportunity to do so (Niessen et al., 2016; Rudolph et al., 2017). Regarding ability, robust traits such as agreeableness, conscientiousness, extraversion, openness to experience, general self-efficacy, and proactivity have been positively linked to job crafting, whereas neuroticism has a robust negative association with job crafting (Rudolph et al., 2017). Concerning motivation, Niessen et al. (2016) and Bindl et al. (2019) revealed that unfulfilled work-related needs for autonomy, competence, and relatedness are positively related to workers' inclination to engage in cognitive crafting. Buonocore et al. (2020) demonstrated that the lack of perceived professional prestige and

job insecurity play a key role in shaping intentions to engage in cognitive crafting. In a meta-analysis, Rudolph et al. (2017) showed that workload is a significant predictor of overall job crafting behavior. Regarding opportunity, Niessen et al. (2016) documented a positive relationship between job autonomy and cognitive crafting.

Research has shown that cognitive job crafting constitutes a powerful strategy to make work more meaningful, maintain high levels of work engagement, and achieve high job performance. For example, cognitive crafting could facilitate a positive self-image and work identity, foster a sense of work autonomy, and motivate workers to keep working vigorously (Berg et al., 2013; Slemp & Vella-Brodrick, 2013). In support of this, empirical studies have reported moderate to strong positive correlations between cognitive crafting and work engagement or one of its constituents (Hu et al., 2020; Iida et al., 2021; Slemp & Vella-Brodrick, 2013). Cognitive crafting has also been linked to in-role and extra-role performance (Geldenhuys et al., 2020), innovation performance (Bindl et al., 2019), and organizational citizenship behavior (Niessen et al., 2016).

Linking these findings to our study context, we predict that cognitive crafting is more beneficial for remote health care workers than for their colleagues who work in the frontline. Compared to frontline health care workers, remote health care workers have less access to significant others with whom they work, including colleagues, patients, and suppliers. This means that they are more often working in solitude and may need their fantasy and imagination to craft their job such that work becomes more meaningful (Wrzesniewski & Dutton, 2001). In addition, remote workers may perceive themselves less competent than frontline health care workers, as their contribution to patient health is more indirect and they are appreciated much less frequently. Put differently, we expect that remote health care workers have a more profound need for connection and competence than frontline health care workers and may therefore benefit more from cognitive job crafting. We thus hypothesize:

Hypothesis 1. WFH moderates the positive relationship between cognitive crafting and work engagement, such that the positive relationship will be stronger for remote health care workers than for frontline health care workers.

Method
Data Collection and Participants
Data collection took place in a hospital in the Netherlands employing about 2,309 people in a region characterized by many COVID-19-related hospital admissions during the time of the research. Data collection lasted from May 7 to June 2, 2020, a period when the Netherlands was gradually relaxing the COVID-19 protective measures (Hoekman et al., 2020). The advice to work from home if possible remained in effect. The hospital's HR department sent an invitation for an online survey to all employees. Participation was voluntary and anonymous.

Measures
Cognitive crafting was measured using the five-item cognitive crafting subscale in the Job Crafting Questionnaire (JCQ;

Slemp & Vella-Brodrick, 2013; sample item: "Think about how your job gives your life purpose," α = .82). The three-factor structure from the original (English) JCQ has been found in various translations, including Dutch (IJbema & Brenninkmeijer, 2018).[1] Answer categories ranged on a 7-point scale, from 1 = *never* to 7 = *strongly agree*.

WFH was measured using the question "Do you work from home because of the outbreak of COVID-19?" Answer categories ranged from 1 = *yes, completely*; 2 = *yes, partly*; to 3 = *no*.

Work engagement was measured using the Dutch three-item Utrecht Work Engagement Scale (Schaufeli et al., 2019), that is, "I am enthusiastic about my job," "At work, I feel bursting with energy," and I am immersed in my job" (α = .85). Answer categories ranged on a 7-point scale, from 1 = *never* to 7 = *strongly agree*.

Control variables. As demographic characteristics can influence job crafting behaviors (Rudolph et al., 2017), we considered age group (1 = *45 years old or below* and 2 = *46 years old or above*) and household composition (i.e., children: 1 = *no* and 2 = *yes*; cohabiting: 1 = *no* and 2 = *yes*) as control variables. We also controlled for mood, as it can infer with scores on more cognitive well-being constructs. We used a single-item measure for this (i.e., "How happy do you feel today?") with answer categories ranging from 1 = *very unhappy* to 10 = *very happy*. For similar reasons, we controlled for perceived stress at work, which was captured using a single-item measure ("My work is stressful"), with answer categories ranging from 1 = *never* to 5 = *always*.

Finally, we included position-by-department dummies as control variables in our regression. Utilizing such a within-occupation design, we look at variation of work engagement within (broad) occupations, which we define by position-by-cluster (e.g. direct care workers working in surgery). In terms of position, we distinguish between five categories: direct care workers (e.g. doctors and nurses), paramedical workers (e.g. physiotherapists and laboratory technicians), facility management (e.g. catering and cleaning staff), managerial workers, and supportive workers (e.g., HR and controllers). In terms of clusters, we are able to distinguish between 15 clusters in the hospital, ranging from the pharmacy to the elderly care facilities. Hence, in the multivariate analyses, we are comparing people WFH and people working onsite who have the same function and work within the same department. This within-occupation analysis is particularly helpful in avoiding distortion by differences in job characteristics across employees, which may confound the relationship between cognitive crafting, WFH, and work engagement.

Data Analysis
We summarized the sample demographics, cognitive crafting, and work engagement per WFH category and used chi-square and analysis of variance tests to discover significant between-groups differences. We presented bivariate Pearson correlations between the study's focal variables. We used a multiple linear regression model to test our hypothesis. All statistical analyses were conducted using Stata Version 16 (StataCorp). *P* values of <.05 were accepted as statistically significant. We reported heteroscedasticity-consistent (or robust) standard errors.

Results
Response Rate and Sample Characteristics
We received a total of 382 responses. The response rate of 17% is not unconventional for unsolicited online surveys for health care professionals (Dykema et al., 2013). The low response rate may also be explained by the great workload health care professionals were facing at the time of data collection. From all respondents, 64 did not answer any questions, 33 respondents did not provide informed consent, and 7 respondents did not fill out all relevant questions. Our common sample therefore consisted of 278 respondents.

The sample characteristics are summarized in Table 1. Respondents predominantly worked as direct care worker (43%), support staff (29%), and paramedical worker (14%). Only 7% of our respondents had a managerial position. To examine the representativeness of the sample, we examined the response per department and department-level headcount obtained from the hospital's HR administration. This comparison suggested that workers in supportive departments were overrepresented in our sample. We do not consider this a problem, as we are primarily interested in differences between staff WFH and working at the hospital, and for the different function categories, we have people represented from all departments. Most respondents were between 36 and 55 years old (59%), which is typical for the Dutch health care sector (Van Roekel et al., 2021). Most respondents had children (64%) and were cohabiting (84%). In total, 64% of respondents did not work from home at all, 17% worked partly from home, and 19% worked from home completely. WFH occurs much less frequently in direct care and facility management, whereas WFH is almost the standard for administrative support staff.

Survey Properties and Bivariate Correlations
The mean scores on cognitive crafting and work engagement were 3.56 (*SD* = 1.11) and 4.95 (*SD* = 1.02), respectively. For the individual cognitive crafting items, averages ranged from 3.06 to 3.87 on a 7-point scale. For the individual work engagement items, averages ranged from 4.76 to 5.12 on a 7-point scale. As shown in Tables 1 and 2, WFH was not significantly associated with the level of cognitive crafting, although it is significantly associated with work engagement. More specifically, remote and (partial) frontline health care workers engage in cognitive crafting to similar extents, and remote health care workers are less engaged than their counterparts working (partially) on the frontline. In addition, as shown in Table 2, cognitive crafting was unrelated to work engagement, which suggests that health care workers who often cognitively craft their job are not necessarily more engaged.

TABLE 1: Demographic characteristics of health care workers in the sample

Characteristics	Total sample (N = 278)		WFH_no (n = 178)		WFH_partly (n = 48)		WFH_completely (n = 52)		
Categorical variables	*n*	%	*n*	%	*n*	%	*n*	%	*p*[a]
Position[b]									.00
Direct care workers	120	43	111	62	8	17	1	2	
Paramedical workers	39	14	28	11	10	21	1	2	
Facility management	19	7	19	5	0	0	0	0	
Managerial workers	20	7	9	6	6	13	5	9	
Supportive workers	80	29	11	16	24	50	45	87	
Age (years)									.17
18–24	9	3	7	4	2	4	0	0	
25–35	48	17	37	21	5	10	6	12	
36–45	72	26	47	26	8	17	17	33	
46–55	91	33	54	30	21	44	16	31	
56 or older	58	21	33	19	12	25	13	25	
Children									.07
Yes	177	64	120	65	32	65	26	50	
No	101	36	58	35	17	35	26	50	
Cohabiting									.42
Yes	241	84	154	87	38	79	43	83	
No	45	16	24	13	10	21	9	17	
Continuous variables	**Mean**	*SD*	**Mean**	*SD*	**Mean**	*SD*	**Mean**	*SD*	
Cognitive crafting	3.56	1.11	3.60	1.10	3.51	1.27	3.45	1.03	.75
Work engagement	4.95	1.01	4.99	0.97	5.20	0.96	4.58	1.14	.00

Note. WFH = working from home; *n* = sample size; *SD* = standard deviation.

[a]The chi-square test of significance between people working from home completely, partially, and not at all for categorical variables and *F* test (using analysis of variance) for all continuous variables.

[b]Direct care workers include nurses, polyclinical assistants, and medical specialists; paramedical workers include physiotherapists and pharmacy assistants; facility management workers include catering, cleaning, and technical workers; managerial workers include heads of departments and managers; supportive staff concerns office workers.

Hypothesis Testing

As demonstrated in Table 3, the regression analysis results from Model 1 show that cognitive crafting is positively related to work engagement and WFH is negatively related to work engagement. In line with our hypothesis, the results from Model 2 suggest that the interaction between cognitive crafting is statistically significant. This means that the relationship between cognitive crafting and work engagement is only significant in the sample of remote health care workers. Cognitive crafting does not seem to contribute to the work engagement of health care workers who partially work from home or health care workers who do not work from home at all. An inspection of the explained variance in Model 1

(cognitive crafting and WFH, $R^2 = 4\%$) and Model 2 (cognitive crafting, WFH, and Cognitive Crafting × WFH, $R^2 = 6\%$) suggests that the explanatory value of cognitive crafting is limited in our sample. Despite the low variance explained, as demonstrated in Models 3 and 4, the interaction term remains significant if we control for a range of demographic and job-specific variables and position-by-cluster dummies. The interaction effect (based on Model 4) is visualized in Figure 1.

Discussion

The outbreak of COVID-19 has led to a drastic change in the organization of work in the health care sector. In this study,

TABLE 2: Bivariate Pearson correlations (N = 278)

	1.	2.	3.	4.	5.
1. Cognitive crafting	—				
2. Working from home$_{completely}$	−.04	—			
3. Working from home$_{partly}$	−.02	−.22*	—		
4. Working from home$_{no}$	.05	−.60*	−.61*	—	
5. Work engagement	.07	−.17*	.11	.05	—

*Note.* The correlation matrix containing all control variables can be obtained by contacting the first author of the study.

*p < .01.

we argued that health care workers who have been ordered to work from home are likely to perceive their jobs as less valued than before, as frontline health care workers are essential in battling the pandemic and are publicly appreciated, and that therefore their work engagement is at risk. We drew upon cognitive crafting theory to hypothesize that cognitive crafting can help remote health care workers strengthen the meaningfulness of their jobs and optimize their work engagement. We additionally hypothesized that frontline health care workers would not benefit from cognitive crafting because of their comparably larger perceived professional prestige. Our results supported both predictions, as demonstrated by a significant interaction effect of cognitive crafting and WFH on work engagement. However, in disagreement with our hypothesis, we found no significant effect of cognitive crafting on work engagement for health care workers only partially WFH. A possible explanation might be that such workers feel important

TABLE 3: Linear regression results on the relationships between cognitive crafting, working from home, and work engagement

	Model 1	Model 2	Model 3	Model 4
Cognitive crafting (mean-centered)	0.06 (0.06)	0.35 (0.15)**	0.39 (0.14)***	0.34 (0.13)**
WFH$_{completely}$	Reference category	Reference category	Reference category	Reference category
WFH$_{partly}$	0.61 (0.21)***	0.58 (0.20)***	0.30 (0.18)*	0.15 (0.20)
WFH$_{no}$	0.40 (0.17)**	0.37 (0.16)**	0.33 (0.15)**	−0.16 (0.25)
Cognitive crafting × WFH$_{partly}$		−0.37 (0.19)**	−0.43 (0.16)***	−0.40 (0.17)**
Cognitive crafting × WFH$_{no}$		−0.34 (0.18)**	−0.36 (0.15)**	−0.29 (0.15)*
Mood			0.38 (0.05)***	0.36 (0.06)***
Stress at work			0.02 (0.06)	−0.01 (0.07)
Age (years)				
18–25			0.13 (0.28)	0.16 (0.34)
26–35			0.08 (0.15)	0.15 (0.16)
36–45			Reference category	Reference category
46–55			0.18 (0.16)	0.15 (0.17)
56 or older			0.33 (0.16)**	0.30 (0.18)*
Cohabiting (0 = *no*, 1 = *yes*)			−0.27 (0.17)	−0.33 (0.18)*
Children (0 = *no*, 1 = *yes*)			0.14 (0.12)	0.10 (0.13)
Position-by-cluster dummies[a]	No	No	No	Yes
N	278	278	278	278
R^2	.04	.06	.29	.41

Note. Robust standard error between parentheses. The slope coefficient of cognitive crafting for employees working from home is positive and statistically significant (β = 0.34, SD = 0.13, p = .01). The slope coefficients of cognitive crafting for workers working partially from home (β = −0.06, SD = 0.11, p = .55) and for workers not working from home (β = 0.05, SD = 0.07, p = .49) are statistically insignificant. WFH = working from home.

[a]This includes 41 dummies.

*p < .10. **p < .05. ***p < .01.
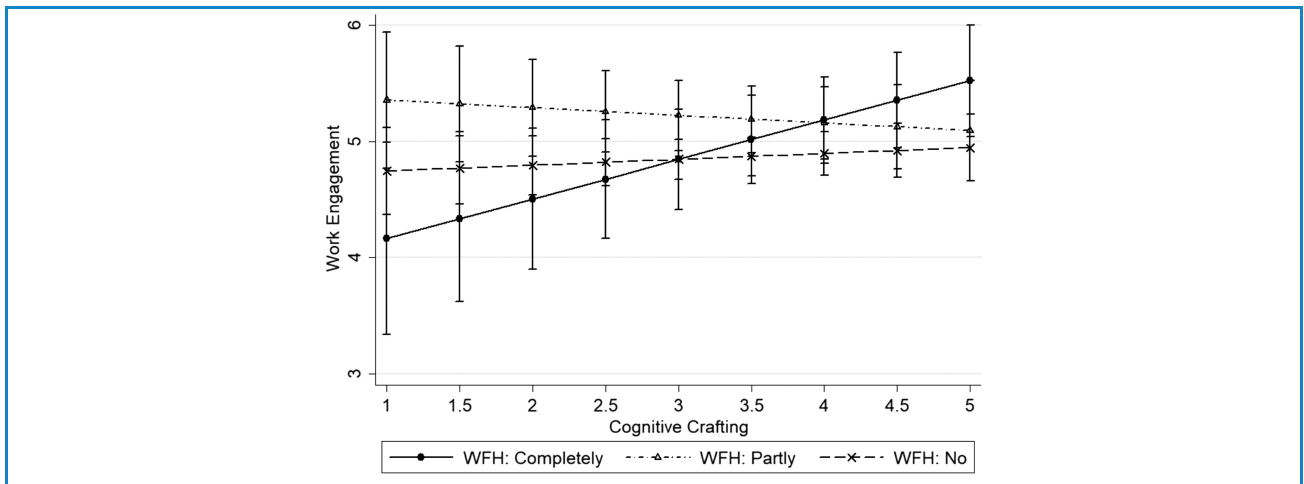
Figure 1. Visualization of the interaction effect of cognitive crafting and working from home on work engagement. WFH = working from home. Work engagement is the linear prediction of work engagement based on Model 4 (see Table 3).

when they are onsite and believe that the public appreciation for frontline health care workers is also directed at them, making cognitive crafting an ineffective coping strategy. Alternatively, it may be that health care workers who partially work from home have more cognitive space to engage in cognitive crafting.

Practice Implications

This study has several practical implications. Primarily, cognitive crafting seems a fruitful strategy for remote health care workers to maintain adequate levels of work engagement: Reminding oneself of the meaning of the job seems to help remote workers neutralize the experience of being away. Hence, we recommend organizations to promote cognitive crafting among remote health care workers. These initiatives should aim at improving remote workers' ability, motivation, and opportunity to cognitively craft their jobs. We propose two courses of action.

First, we recommend health care organizations to offer cognitive job crafting interventions. Previous research suggests that an effective job crafting intervention consists of multiple training days over several weeks and combines an introduction of job crafting theory and practical exercises (Knight et al., 2019; Sakuraya et al., 2016, 2020). Practical exercises can be delivered to individual workers, for example, completing the Michigan Job Crafting Exercise (Berg et al., 2010) and developing a personal job crafting plan, as well as to the group, for example, sharing personal crafting stories and brainstorming about effective job crafting strategies. As face-to-face training may be infeasible during the COVID-19 pandemic, we recommend online cognitive job crafting interventions. To make sure these online interventions are effective, organizations are well advised to maximize virtual connection with the trainer and colleagues and engage participants by sending reminders and giving homework (Ouweneel et al., 2013). As attrition is higher in Internet interventions because of an unfulfilled desire for human connection (Mitchell et al., 2009), we urge organizations to make extensive use of video-conferencing software during training.

Second, we encourage organizations to expose remote health care workers to testimonies of people who are positively affected by their work. These testimonies can help workers to think of relevant cognitive crafting strategies and serve as input during cognitive crafting training. For example, records indicating that clinical staff has access to enough protective medical equipment and feel safer at work may lead to an increased sense of meaningfulness among those remote workers in charge of purchasing and distributing this equipment. Indeed, previous research suggests that connecting workers to the beneficiaries of their work may lead to an increased sense of work meaningfulness (Michaelson et al., 2014). We advise organizations to focus on testimonies of health care workers instead of testimonies of patients, as the impact of the work of remote health care workers often remains invisible to patients. Testimonials can be obtained by including open-ended questions in an online survey (Dykema et al., 2013).

Notably, as cognitive crafting explained limited variance in work engagement and seems less important for frontline health care workers, we want to emphasize that promoting cognitive crafting alone is not enough to safeguard work engagement in health care organizations. What is needed is a sustainable, comprehensive work design policy approach. Specifically, we recommend organizations to engage in effective top-down work design and foster a climate for cognitive as well as behavioral job crafting strategies (Kniffin et al., 2020). For example, health care executives and line managers may want to use top-down strategies to reorganize work tasks to maximize perceived job autonomy (Antoinette Bargagliotti, 2012), ensure that the strategic position of all jobs in health care organizations are acknowledged (Hennekam et al., 2020), and create ample opportunity for workers to proactively optimize their job demands and seek job resources in order to thrive at work (Tims et al., 2012).

Limitations and Future Research Recommendations

Although our study shows several new insights on the relation between cognitive crafting and work engagement, our

study has several limitations. As our data are cross-sectional, our results should be interpreted as a conditional association rather than a causal relationship. For instance, recent organizational psychological research suggests that job crafting and work engagement are reciprocal (Bakker & Demerouti, 2017). For future research and to study the causal relationship between cognitive crafting and work engagement, we therefore recommend researchers to measure the current study's variables at multiple time points and examine changes over time. This longitudinal data would help test the temporal robustness of our interaction term. It may be that, as the pandemic continues or ends, a decline in public appreciation and professional prestige occurs (Hennekam et al., 2020), possibly rendering cognitive crafting a relevant coping strategy for frontline health care workers. In support of this, prepandemic research shows that cognitive crafting is positively related to the work engagement of frontline health care workers (Hu et al., 2020). Also, our study does not shed light on the psychological mechanisms that underpins the moderation model. Therefore, to unravel this mechanism, we encourage researchers to consider meaningful work as mediating variable.

Furthermore, as we only relied on quantitative measures to test our hypothesis, we recommend mixed-methods research to increase understanding of how, when, and why individual health care workers cognitively craft (Niessen et al., 2016). In-depth interviews could indicate in what way perceived meaningfulness and decreased professional prestige ignite cognitive crafting practices and in which circumstances workers especially mentally craft their work experiences.

Finally, in light of the unusual timing of study (i.e., the first wave of the COVID-19 pandemic), specific health care context (i.e., a Dutch hospital), and a relatively low response rate (i.e., 17%), the generalizability of our findings to other health care organizations, industries, or countries may be limited. In addition, because of the unavailability of prepandemic data and detailed data on work tasks, we cannot be certain that cognitive crafting is effective for all kinds of remote health care workers and ineffective for all kinds of frontline health care workers. It may be that experienced remote workers in managerial positions with high perceived prestige struggle less with work meaningfulness and hence do not benefit from cognitive crafting as much as their subordinates. It might equally be that hospital workers treating non-COVID-19 patients feel that their contribution is (wrongly) underappreciated and thus benefit from cognitive crafting. In light of these limitations, future studies are advised to collect specific data on work tasks, experience with remote working before the pandemic and perceived professional prestige, and use these data to differentiate within the health care sector for a more nuanced understanding. Furthermore, it would be interesting to test the current hypotheses in other countries and in other essential sectors during the pandemic, including supermarkets, public transportation, and law enforcement.

Conclusion

In this article, we extended the job crafting literature and explored the cognitive dimension of job crafting for remote health care workers' jobs in the context of the COVID-19 pandemic. We found that cognitive crafting may especially aid remote health care workers in staying engaged at work during difficult times. We hope that this study will incite further research into the workings of cognitive crafting and will increase the awareness of supporting remote health care workers during the COVID-19 outbreak, similarly.

References

ABC. (2020). *"Once a nurse, always a nurse": 20,000 Former U.K. medics return to battle coronavirus*. https://abcnews.go.com/International/nurse-nurse-20000-uk-medics-return-battle-coronavirus/story?id=69872577

Antoinette Bargagliotti, L. (2012). Work engagement in nursing: A concept analysis. *Journal of Advanced Nursing*, 68(6), 1414–1428.

Bakker, A. B., & Demerouti, E. (2017). Job demands–resources theory: Taking stock and looking forward. *Journal of Occupational Health Psychology*, 22(3), 273–285.

Bapuji, H., Patel, C., Ertug, G., & Allen, D. G. (2020). *Corona crisis and inequality: Why management research needs a societal turn*. SAGE.

Berg, J. M., Dutton, J. E., & Wrzesniewski, A. (2013). Job crafting and meaningful work. In Dik, B. J., Byrne, Z. S., & Steger, M. F. (Eds.), *Purpose and meaning in the workplace* (pp. 81–104). American Psychological Association.

Berg, J. M., Wrzesniewski, A., & Dutton, J. E. (2010). Perceiving and responding to challenges in job crafting at different ranks: When proactivity requires adaptivity. *Journal of Organizational Behavior*, 31(2–3), 158–186.

Bindl, U. K., Unsworth, K. L., Gibson, C. B., & Stride, C. B. (2019). Job crafting revisited: Implications of an extended framework for active changes at work. *Journal of Applied Psychology*, 104(5), 605–628.

Buonocore, F., de Gennaro, D., Russo, M., & Salvatore, D. (2020). Cognitive job crafting: A possible response to increasing job insecurity and declining professional prestige. *Human Resource Management Journal*, 30(2), 244–259.

Centers for Disease Control and Prevention. (2020, May 5). *Employees: How to cope with job stress and build resilience during the COVID-19 pandemic*. https://www.cdc.gov/coronavirus/2019-ncov/community/mental-health-non-healthcare.html

Dykema, J., Jones, N. R., Piche, T., & Stevenson, J. (2013). Surveying clinicians by web: Current issues in design and administration. *Evaluation & the Health Professions*, 36(3), 352–381.

Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, 7(2), 117–140.

Geldenhuys, M., Bakker, A. B., & Demerouti, E. (2020). How task, relational and cognitive crafting relate to job performance: A weekly diary study on the role of meaningfulness. *European Journal of Work and Organizational Psychology*, 30(1), 83–94.

Hennekam, S., Ladge, J., & Shymko, Y. (2020). From zero to hero: An exploratory study examining sudden hero status among nonphysician health care workers during the COVID-19 pandemic. *Journal of Applied Psychology*, 105(10), 1088–1100.

Hoekman, L. M., Smits, M. M. V., & Koolman, X. (2020). The Dutch COVID-19 approach: Regional differences in a small country. *Health Policy and Technology*, 9(4), 613–622.

Hu, Q., Taris, T. W., Dollard, M. F., & Schaufeli, W. B. (2020). An exploration of the component validity of job crafting. *European Journal of Work and Organizational Psychology*, 29(5), 776–793.

Iida, M., Watanabe, K., Imamura, K., Sakuraya, A., Asaoka, H., Sato, N., Nozawa, K., & Kawakami, N. (2021). Development and validation of the Japanese version of the team job crafting scale for nurses. *Research in Nursing & Health*, 44(2), 329–343.

IJbema, J., & Brenninkmeijer, V. (2018). *Cognitive job crafting: A daily diary study* [Manuscript in preparation].

International Labour Organization. (2020). *ILO sectoral brief: COVID-19 and the health sector*. https://www.ilo.org/wcmsp5/groups/public/—ed_dialogue/—sector/documents/briefingnote/wcms_741655.pdf

Ipsen, C., van Veldhoven, M., Kirchner, K., & Hansen, J. P. (2021). Six key advantages and disadvantages of working from home in Europe during COVID-19. *International Journal of Environmental Research and Public Health*, 18(4), 1826.

Kilroy, S., Flood, P. C., Bosak, J., & Chênevert, D. (2017). Perceptions of high-involvement work practices, person-organization fit, and burnout: A time-lagged study of health care employees. *Human Resource Management*, 56(5), 821–835.

Kniffin, K. M., Narayanan, J., Anseel, F., Antonakis, J., Ashford, S. J., Bakker, A. B., Bamberger, P., Bapuji, H., Bhave, D. P., Choi, V. K., Creary, S., & Van Vugt, M. (2020). COVID-19 and the workplace: Implications, issues, and insights for future research and action. *American Psychologist*, 76(1), 63.

Knight, C., Patterson, M., & Dawson, J. (2019). Work engagement interventions can be effective: A systematic review. *European Journal of Work and Organizational Psychology*, 28(3), 348–372.

Lazazzara, A., Tims, M., & De Gennaro, D. (2020). The process of reinventing a job: A meta-synthesis of qualitative job crafting research. *Journal of Vocational Behavior*, 116, 103267.

Liu, Q., Luo, D., Haase, J. E., Guo, Q., Wang, X. Q., Liu, S., Xia, L., Liu, Z., Yang, J., & Yang, B. X. (2020). The experiences of health-care providers during the COVID-19 crisis in China: A qualitative study. *The Lancet Global Health*, 8(6), e790–e798.

Melo, N., Dourado, D., & Andrade, J. (2021). Reclaiming cognitive crafting: An integrative model of behavioral and cognitive practices in job crafting. *International Journal of Organizational Analysis*. Advance online publication.

Michaelson, C., Pratt, M. G., Grant, A. M., & Dunn, C. P. (2014). Meaningful work: Connecting business ethics and organization studies. *Journal of Business Ethics*, 121(1), 77–90.

Mitchell, J., Stanimirovic, R., Klein, B., & Vella-Brodrick, D. (2009). A randomised controlled trial of a self-guided internet intervention promoting well-being. *Computers in Human Behavior*, 25(3), 749–760.

Niessen, C., Weseler, D., & Kostova, P. (2016). When and why do individuals craft their jobs? The role of individual motivation and work characteristics for job crafting. *Human Relations*, 69(6), 1287–1313.

Ouweneel, E., Le Blanc, P. M., & Schaufeli, W. B. (2013). Do-it-yourself: An online positive psychology intervention to promote positive emotions, self-efficacy, and engagement at work. *The Career Development International*, 18(2), 173–195.

Pappa, S., Ntella, V., Giannakas, T., Giannakoulis, V. G., Papoutsi, E., & Katsaounou, P. (2020). Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: A systematic review and meta-analysis. *Brain, Behavior, and Immunity.*, 88, 901–907.

Parker, S. K. (2014). Beyond motivation: Job and work design for development, health, ambidexterity, and more. *Annual Review of Psychology*, 65, 661–691.

Rudolph, C. W., Katz, I. M., Lavigne, K. N., & Zacher, H. (2017). Job crafting: A meta-analysis of relationships with individual differences, job characteristics, and work outcomes. *Journal of Vocational Behavior*, 102, 112–138.

Sakuraya, A., Shimazu, A., Imamura, K., & Kawakami, N. (2020). Effects of a job crafting intervention program on work engagement among Japanese employees: A randomized controlled trial. *Frontiers in Psychology*, 11, 235.

Sakuraya, A., Shimazu, A., Imamura, K., Namba, K., & Kawakami, N. (2016). Effects of a job crafting intervention program on work engagement among Japanese employees: A pretest–posttest study. *BMC Psychology*, 4(1), 49.

Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness Studies*, 3(1), 71–92.

Schaufeli, W. B., Shimazu, A., Hakanen, J., Salanova, M., & De Witte, H. (2019). An ultra-short measure for work engagement: The UWES-3 validation across five countries. *European Journal of Psychological Assessment*, 34(4), 577–591.

Slemp, G. R., & Vella-Brodrick, D. A. (2013). The job crafting questionnaire: A new scale to measure the extent to which employees engage in job crafting. *International Journal of Wellbeing*, 3(2).

Tims, M., Bakker, A. B., & Derks, D. (2012). Development and validation of the job crafting scale. *Journal of Vocational Behavior*, 80(1), 173–186.

Van Roekel, H., Van der Fels, I., Bakker, A. B., & Tummers, L. G. (2021). Healthcare workers who work with COVID-19 patients are more physically exhausted and have more sleep problems. *Frontiers in Psychology*, 11, 3843.

Van Wingerden, J., Bakker, A. B., & Derks, D. (2017). Fostering employee well-being via a job crafting intervention. *Journal of Vocational Behavior*, 100, 164–174.

Van Wingerden, J., Van der Stoep, J., & Poell, R. F. (2018). Meaningful work and work engagement: The mediating role of perceived opportunity to craft and job crafting behavior. *International Journal of Human Resource Studies*, 8(2), 1–15.

Wrzesniewski, A., & Dutton, J. E. (2001). Crafting a job: Revisioning employees as active crafters of their work. *Academy of Management Review*, 26(2), 179–201.

Zhang, F., & Parker, S. K. (2019). Reorienting job crafting research: A hierarchical structure of job crafting concepts and integrative review. *Journal of Organizational Behavior*, 40(2), 126–146.