



# Managing boundaries for well-being: a study of work-nonwork balance crafting during the COVID-19 pandemic

Sophie E. Brogle<sup>1</sup> · Philipp Kerksieck<sup>1</sup> · Georg F. Bauer<sup>1</sup> · Anja I. Morstatt<sup>1</sup>

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## Abstract

In the wake of the COVID-19 pandemic, the boundaries between the work and nonwork domain have rapidly blurred, presenting employees with new challenges and potentially heightening interference of the work with the nonwork domain (work-home interference, WHI) and vice versa (home-work interference, HWI). To counteract these interferences, employees can apply work-nonwork balance crafting (WNBC), referring to proactive efforts for balancing both life domains by targeting the permeability of the boundary between them. Employees may focus their crafting on the boundary toward the work domain (WNBC-work) or the non-work domain (WNBC-nonwork), e.g., shielding each domain from negative spill-over from the other. This study aims to investigate the longitudinal associations of WNBC with health outcomes during the COVID-19 pandemic. We hypothesized that individuals who exhibited more such crafting behaviors at the onset of the pandemic would experience higher mental well-being and work engagement at later points in the COVID-19 pandemic, mediated by lower WHI and HWI. We surveyed  $N=2,171$  German-speaking employees from Germany, Austria, and Switzerland at three time points during 2020. Structural equation model results indicate that only WNBC-work is longitudinally negatively associated with reduced HWI and positively associated with mental well-being and work engagement. Further, in our sample, only HWI is longitudinally associated with lower mental well-being. No indirect effect reaches significance. Our results underline the importance of WNBC in the work domain in the early phases of the COVID-19 pandemic. Future research should explore the nature of the direct links between WNBC and mental well-being and work engagement and consider alternative mediating processes, such as gain spirals. Lastly, our study underscores that supporting employees in crafting boundaries for well-being can be crucial, particularly during times of crisis.

**Keywords** Work-nonwork balance crafting · Crafting behaviors · Work-home resources model · Life domain conflicts · Work engagement · Work-related burnout

## Introduction

The world was hit by the COVID-19 pandemic in March 2020, and governments worldwide aimed to contain the virus and prevent its spreading by inaugurating various measures, e.g., school closures, remote work, nationwide lockdowns (Hale et al., 2021; Rudolph et al., 2021). Since then, life for many employees has changed drastically, and the boundaries between work and nonwork have blurred

increasingly (Cho, 2020; Vaziri et al., 2020). For many, their life domains clashed literally, as they were forced to work remotely, through which private and professional life occurred in the same physical space (Kaltiainen & Hakanen, 2023; Kniffin et al., 2021). For others, e.g., health workers or supermarket staff, a drastic increase in workload and increasingly straining mental and physical work conditions might have interfered with their capacities to deal with nonwork demands (Benfante et al., 2020). Such life domain conflicts are associated with adverse health consequences such as exhaustion (Reinke & Gerlach, 2022), but also reduced work engagement (Karatepe & Karadas, 2016) and impaired mental health (Yucel & Fan, 2019). For the time of the pandemic, a large study in the UK covering only a time frame until May 2020 indicated that mental health was negatively affected in this early phase (O'Connor et al.,

✉ Anja I. Morstatt  
anja.morstatt@uzh.ch

<sup>1</sup> Public and Organizational Health / Center of Salutogenesis, Institute of Epidemiology, Biostatistics, and Prevention, University of Zurich, Zurich, Switzerland

2021). Thus, more knowledge on how life domain conflicts and impaired health unfolded throughout the pandemic is needed. Further, employees might have experienced the pandemic differentially, likely depending on their proactive and agentic efforts to deal with the pandemic (Demerouti & Bakker, 2022). Thus, the present study aims to examine how employees' proactive crafting of the boundaries between work and non-work life domains is related to employee health during the COVID-19 crisis. We hypothesized that exhibiting more WNBC at the start of the pandemic would be associated with higher mental well-being and work engagement 8 months later, mediated by lower WHI and HWI.

Proactive behaviors, e.g., job crafting (Tims et al., 2012; Tims & Bakker, 2010; Wrzesniewski & Dutton, 2001), have been shown to play a relevant role in changing situations, e.g., organizational changes, and in maintaining work engagement (Petrou et al., 2018). Further, job crafting has been identified as a buffer to life domain conflicts (Lyu & Fan, 2022). However, the single life domain focus for crafting lacks breadth in understanding proactivity. The concept of job crafting has recently been transferred to the off-job domain (see literature on off-job crafting; Kujanpää et al., 2022) and further to the idea that the boundaries between life domains and, therefore, a balance between them can also be actively crafted (work nonwork balance crafting; WNBC) (Kerksieck et al., 2022). Due to the above-described shifting and blurring of work-nonwork boundaries during the COVID-19 crisis, WNBC, as a targeted, proactive strategy, is well suited to study how employees dealt with the clashing of life domains and how this is related to mental well-being and work engagement of employees during the first year of the global health crisis. Recent research indicates that there may be associations between crafting in different life domains, and that crafting is not limited to specific life domains but can also span across life domains (de Bloom et al., 2020; Demerouti et al., 2020). Consequently, WNBC itself focuses on the proactive crafting of said boundary and not, as other types of crafting, on crafting specific life domain characteristics with a focus on a single domain. We used a cross-lagged panel model approach with three waves, covering a period of 8 months during 2020. For the analysis, a structural equation model was specified, and the hypotheses were tested using path estimates. Our research model is depicted in Fig. 1.

Our study makes two main contributions to research on the COVID-19 pandemic and crafting in general. First, our study captures a significant part of the first pandemic year and can shed light on long-term associations of proactive behaviors early in the pandemic. The beginning of the pandemic was a difficult time for most people. In many cases, workers faced a completely new situation, e.g., when

affected by home office regulations (Tušl et al., 2021). However, by forming new routines and adapting behaviors to the novel needs caused by the pandemic and lockdown measures, people had a chance to influence their future experience of the pandemic (Chankasingh et al., 2022). By reviewing how WNBC at the pandemic onset is longitudinally linked with life domain conflicts and well-being, we provide knowledge on how to design early interventions supporting employees in their own crafting during future emergencies. For policymakers as well as organizations, this can increase future crisis preparedness.

Second, we add knowledge to WNBC research and, more specifically, whether life domain conflicts mediate between WNBC and well-being in both life domains, more specifically with mental well-being and work engagement. Previously, it was already demonstrated that WNBC is longitudinally linked with family role and job performance, job and life satisfaction, and work engagement (Kerksieck et al., 2022). However, the mechanisms still need to be clarified. Further, we closely examine domain-specific associations, which aids in understanding which domain focus might be more relevant in maintaining well-being over time. Those insights are highly significant for a more informed crisis management and can help organizations in supporting their employees to use bottom-up self-management crafting strategies to their benefit. This is important, since research on life-role interference during the pandemic has indicated the urgent need for proactive adjustments of roles employees fulfill at work and at home (Syrek et al., 2022). Furthermore, this knowledge about the role of WNBC will become ever more important even outside of the pandemic context, as the future of work will increasingly require the ability to deal with demands from the continuously intertwined work and nonwork domains (Caringal-Go et al., 2022; Mäkikangas et al., 2024; Rudolph et al., 2021).

## Background

### Work-nonwork balance crafting as a buffer to life domain conflicts

Crafting generally describes self-initiated behaviors people undertake to shape or mold certain aspects of their lives according to their individual needs or preferences (Wrzesniewski & Dutton, 2001). Specifically, WNBC (Kerksieck et al., 2022) builds on this conceptualization and refers to proactive behaviors aiming to craft the boundaries between work and nonwork life according to individual needs (de Bloom et al., 2020). Other forms of crafting, e.g., job crafting (Tims et al., 2012; Wrzesniewski & Dutton, 2001) or off-job crafting (Kujanpää et al., 2022) show negative

associations with stress experience (Ingusci et al., 2021) and burnout (Pijpker et al., 2022), among others.

WNBC efforts can focus on different life domains, resp. dimensions. For example, if someone tries hard to make time to take care of their remotely schooled children (due to the lockdown) while being strongly demanded by their work tasks, they focus on their private life and proactively ensure that they can meet their family obligations. Employees might be proactively setting clear time boundaries for work-related requests. In this way, the caring responsibilities in the nonwork life domain are prioritized. Work-related demands are dealt with after caring duties have been completed. In this way, crafting efforts are directed towards the employee's nonwork life domain (WNBC-nonwork). On the other hand, employees might also proactively regulate a bad mood due to non-work reasons, e.g., increasingly demanding and stressful caring responsibilities due to COVID-19 measures, so that their work life is not affected. Their crafting efforts are then focused on the work life domain (WNBC-work). These two behaviors – protecting the work domain from the nonwork domain and vice versa – are not mutually exclusive and can take place simultaneously. Additionally, WNBC can occur as physical, relational, or cognitive crafting (Kerksieck et al., 2022). While theories on segmentation and integration are already well studied (Ashforth et al., 2000), they lack a nuanced perspective of how the boundary between life domains is created. WNBC suggests an active process whereby employees build their boundary from both sides: When guarding the work domain, they may prevent spillover from the non-work domain to the work domain, while still allowing a spillover from work to non-work, and vice versa. Therefore, WNBC offers a more comprehensive perspective that also allows for the prioritization of one domain. To summarize, WNBC refers to proactive behaviors aimed at balancing life domains – or managing life domain conflicts – and can be focused on the work or the nonwork domain.

### **Intensified life domain conflicts as consequence of pandemic working conditions**

At the beginning of the pandemic, forced teleworking, increasing strain at work, and, for many, also increased care duties rapidly aggravated life domain conflicts. Both work-home interference (WHI) and home-work interference (HWI) (Kopelman et al., 1983) are indicators of a disturbed life domain balance, resulting in, i.e., life domain conflicts. When experiencing high WHI, an individual might not be able to fully enjoy the company of their family and friends because they worry about their work, which might be more demanding than usual due to the changed work form and workplace uncertainty during the pandemic. Whereas when

experiencing high HWI, an individual might have issues focusing on work because they are preoccupied with worries about one of their family members being ill or struggling during the pandemic. Although the two constructs are conceptually separated due to the different directions of influence, they are related and can co-occur (Frone et al., 1992).

During the pivotal pandemic phase when first containment measures were put in place, we assume that the adoption and extent of WNBC practices varied among individuals and that WNBC potentially acted as a buffer against the escalation of life domain conflicts. Especially the beginning of the pandemic has been a crucial phase that set how employees experienced the subsequent course of the pandemic (Chankasingh et al., 2022). When crafting for the boundaries between the work and nonwork life, potentially a work-nonwork balance is created (Gravador & Teng-Calleja, 2018) and accompanied by lower conflicts between the two domains (both WHI and HWI), depending on the domain focus of the crafting.

### **Relationships between WNBC and life domain conflicts**

We assume a life domain congruence in the association between WNBC and the life domain conflicts, such that WNBC with a focus on the nonwork domain is negatively associated with WHI, and WNBC with a focus on the work domain is negatively associated with HWI. Previous research found that high work demands, e.g., a high workload, predict WHI and high demands in the private domain predict HWI (Demerouti et al., 2004). In general, employees employing WNBC use different behaviors to prevent the potential for conflict between their work and private life domains. Employees focusing on WNBC in the nonwork domain, e.g., strategically distribute their work hours, thereby creating pockets of dedicated quality time with their family or partner. By orchestrating such intentional compartmentalization, WNBC minimizes the permeation of work-related stressors into the nonwork domain. Similarly, employees focus WNBC on the work domain, e.g., craft clashing domains, by actively planning their working days and fitting small time pockets to complete necessary private chores while ensuring that their work receives sufficient attention. Further, WNBC also captures employees' behaviors to prevent negative affect spillover in the work or the nonwork domain to protect their resources and maintain their functioning in both life domains. This should in the long run reduce life domain conflicts as well.

Drawing a specific lens on the unfolding of the pandemic, we suggest that individuals who embraced WNBC strategies during the initial stages of the crisis were able to

mitigate the aggravation of life domain conflicts. This proactive stance towards WNBC might have acted as a buffer against the rising challenges imposed by the pandemic. Consequently, as the pandemic unfolded, individuals who had actively engaged in higher levels of WNBC might have been better positioned to navigate subsequent challenges, leading to a diminished prevalence of life domain conflicts in their ongoing experiences compared to those who had engaged in comparatively less WNBC practices.

Based on the above literature review, we derive the following hypotheses:

*H1.1: WNBC-nonwork at the pandemic onset (t1) is negatively associated with WHI in the middle of 2020 (t2).*

*H1.2: WNBC-work at the pandemic onset (t1) is negatively associated with HWI in the middle of 2020 (t2).*

### **Life domain conflicts and impaired long-term mental well-being and work engagement**

Experiencing life domain conflicts impairs health and well-being both in the short and long run (e.g., Karatepe & Karadas, 2016; Yucel & Fan, 2019). According to the Work-Home Resources Model (ten Brummelhuis & Bakker, 2012), chronic demands or life domain conflicts lead to a person having to constantly invest resources, which can lead to a depletion process over time. This continuous resource depletion (termed “loss spiral” in the Conservation of Resources Theory (COR; Hobfoll, 1989) is associated with negative consequences (e.g., Brosschot et al., 2006), including reduced work engagement (Halbesleben, 2010; Xanthopoulou et al., 2009).

Thus, we suggest that also during the COVID-19 pandemic, both types of life domain conflicts are negatively associated with subsequent mental well-being and work engagement, the health indicators of our study. Whether in pre-pandemic times or since the onset of the pandemic, whenever employees experience life domain conflicts, they need to invest resources to maintain their usual level of performance and to deal with the demands of their work and nonwork life, which further drains their resources and impairs their health.

First, we study how life domain conflicts are linked with mental well-being. The WHO defines mental well-being as a state ‘which allows individuals to realize their abilities, cope with the normal stresses of life, work productively and fruitfully, and make a contribution to their community’ (World Health Organization, 2001, p. 1). It captures both aspects of satisfaction, positive affect, and psychological functioning (Ryan & Deci, 2001). As life domain conflicts have been linked with higher stress (Chapman et al., 1994),

lower life satisfaction (Adams et al., 1996), and reduced general well-being (Grant-Vallone & Donaldson, 2001), we suggest that they predict reduced mental well-being as well.

*H2.1: (a) HWI and (b) WHI in the middle of 2020 (t2) are negatively related to mental well-being at the end of 2020 (t3).*

Second, we study how life domain conflicts are linked with work engagement. Work engagement can be defined as a positive, fulfilling state in which employees strive to actively use their personal resources to accomplish the work tasks at hand and perform well in the process (Schaufeli & Greenglass, 2001). Previous research has shown that life domain conflicts in both directions are negatively associated with work engagement (Karatepe & Karadas, 2016), both before and during the pandemic (Galanti et al., 2021). When private life interferes with work, e.g., due to additional care duties for stay-at-home children who had remote classes during the pandemic (Rieth & Hagemann, 2021), employees might have a more challenging time focusing on work, thereby limiting the experience of work engagement. However, work might also interfere with private life, e.g., due to forced teleworking, which might call employees to invest additional resources to maintain performance, increasing exhaustion in the long run. Accordingly, Kaltainen and Hakaken (2023) report an indirect link between increased telework due to the pandemic and decreased work engagement via WHI. To conclude, we suggest that both types of life domain conflicts are associated with lower work engagement:

*H2.2: (a) HWI and (b) WHI in the middle of 2020 (t2) are negatively related to work engagement at the end of 2020 (t3).*

### **WNBC and subsequent mental well-being and work engagement**

Finally, in this study, we also aim to study the long-term association between WNBC and both mental well-being and work engagement via reduced life domain conflicts. This adds depth to our understanding of how proactive behaviors early in the pandemic could be connected to long-term health and well-being. Notably, the direct link between WNBC and heightened work engagement has been substantiated in existing literature (Kerksieck et al., 2022). Our study examines a potential mechanism explaining this association by reviewing the life domain conflicts as mediators. Therefore, we link WNBC as a proactive and preventive strategy to the loss spiral between life domain conflicts and health and well-being.

By its proactive nature, WNBC might preempt and neutralize potential conflicts that may arise in the context of the COVID-19 pandemic’s unique demands. In doing so, WNBC may counter the loss spiral and prevent the gradual depletion of personal resources occasioned by unaddressed life domain conflicts. In turn, WNBC potentially aids in preserving and potentially augmenting precious personal resources and maintaining health and well-being.

To conclude, we suggest the following hypotheses:

- H3.1: WNBC-nonwork at the pandemic onset (t1) is indirectly positively related to (a) work engagement and (b) mental well-being at the end of 2020 (t3), mediated by WHI in the middle of 2020 (t2).*
- H3.2: WNBC-work at the pandemic onset (t1) is indirectly positively related to (a) work engagement and (b) mental well-being at the end of 2020 (t3), mediated by HWI in the middle of 2020 (t2).*

## Methods

### Data collection and sample

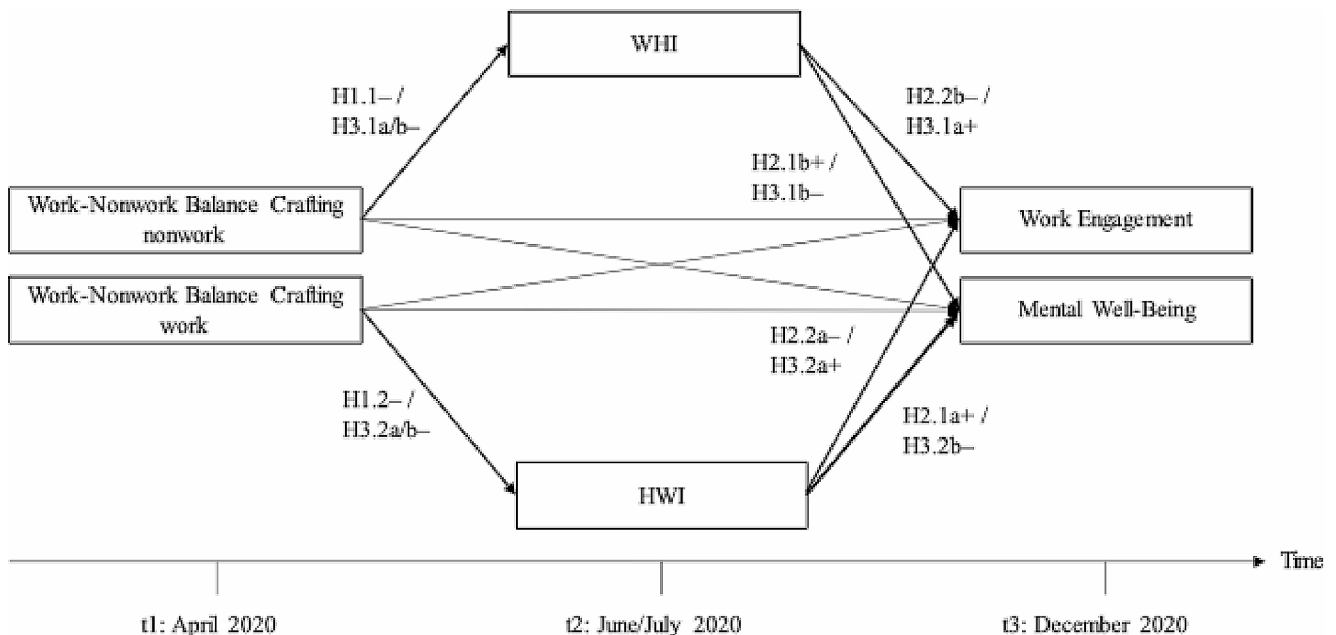
For our study, we refer to three time points from a more extensive longitudinal panel data collection. The three survey waves cover the period from April 2020 to December 2020 (see Fig. 1). Participants were recruited via the market

research provider Bilendi (formerly respondi; [www.bilendi.de](http://www.bilendi.de)). Inclusion criteria were a weekly working time of at least 20 h per week and being employed. The age ranged from 17 to 66 years ( $M=46.9, SD=11.23$ ), with 45.78% of the sample identifying as female. Participants came from Germany, Austria, or Switzerland. Sample sizes were 2,130 (wave 1), 1,633 (wave 2), and 1,178 (wave 3). In total, adjusted data points from 2,171 participants are available between waves 1 and 3, whereby participants who only took part in one wave were also included.

Dropout analyses of those participants who only participated in wave 1 and not in waves 2 and 3 were performed (dropout:  $N=497$ ). Mean differences in age ( $M_{\text{continuers}} = 47.71$  years vs.  $M_{\text{dropout}} = 44.02$  years;  $t(764.15) = 6.1501, p < .001$ ) and life domain conflicts (WHI:  $M_{\text{continuers}} = 1.85$  vs.  $M_{\text{dropout}} = 1.92$ ;  $t(778.56) = -2.482, p = .013$ ; HWI:  $M_{\text{continuers}} = 1.55$  vs.  $M_{\text{dropout}} = 1.62$ ;  $t(778.32) = -2.684, p = .007$ ) were significant, indicating that the participants who dropped out after wave 1 were slightly younger and experienced higher life domain conflicts than the people who kept on participating in wave 2 and/or 3. In both cases, the group means were close to each other. There was no significant difference for gender and WNBC.

### Measures

All measures were presented in German. In Table 1, descriptive statistics and correlations between measures are presented.



**Fig. 1** Research model. *Note.* H3.1 and H3.2 are mediation hypotheses whose sub-paths are shown in the model. For the constructs at t2 and t3, stability was controlled by including an autoregressive path from

the previous wave, though not shown in the model. The nationwide Swiss lockdown due to the COVID-19 pandemic began on March 16<sup>th</sup>, 2020 (Lockdown, 2021)

**Table 1** Descriptive statistics and correlations between measures

Variable	M	SD	1	2	3	4	5	6	7	8	9	10
1. WNBC-w w1	3.8	0.65	0.59									
2. WNBC-nw w1	3.8	0.68	0.47***	0.64								
3. WHI w1	1.9	0.52	-0.01	-0.16***	0.88							
4. HWI w1	1.6	0.48	-0.17***	-0.13***	0.54***	0.80						
5. WHI w2	1.9	0.52	-0.02	-0.13***	0.75***	0.40***	0.88					
6. HWI w2	1.6	0.49	-0.17***	-0.14***	0.44***	0.66***	0.57***	0.81				
7. MWB w2	3.7	0.66	0.20***	0.26***	-0.36***	-0.38***	-0.39***	-0.42***	0.89			
8. WE w2	3.2	1.4	0.31***	0.10***	-0.17***	-0.18***	-0.19***	-0.21***	0.49***	0.97		
9. MWB w3	3.7	0.67	0.23***	0.29***	-0.31***	-0.36***	-0.32***	-0.40***	0.78***	0.45***	0.90	
10. WE w3	3.2	1.4	0.31***	0.13***	-0.19***	-0.21***	-0.21***	-0.25***	0.49***	0.84***	0.52***	0.97

M= Mean, SD= Standard deviation, WNBC-w = work-nonwork balance crafting work, WNBC-nw = work-nonwork balance crafting nonwork, WHI = work-home interaction, HWI = home-work interaction, MWB = mental well-being. WE = work engagement, w1 = wave 1, w2 = wave 2, w3 = wave 3.  $N_{wave1} = 2,130$ ,  $N_{wave2} = 1,633$  and  $N_{wave3} = 1,178$ . Means and standard deviations were obtained using mean scores for the measures. Across the diagonal, internal consistencies (Cronbach's alpha) are reported in italics. \* =  $p < .05$ , \*\* =  $p < .01$ , \*\*\* =  $p < .001$

### Work-nonwork balance crafting

WNBC was measured at wave 1 with 16 items of the Work-Nonwork Balance Crafting Scale (Kerksieck et al., 2022). The construct consists of two factors – crafting in the work and the nonwork domain. In the original scale, both factors contain all three crafting behaviors established (physical, relational, and cognitive/emotional). Example items are: ‘*If I must get personal chores done during working time, I make sure that my work won't be negatively affected.*’ (WNBC-work) and ‘*I try hard to meet my private obligations, even if I'm demanded strongly by my work.*’ (WNBC-nonwork). The response format corresponds to a 5-point Likert scale (1 = ‘strongly disagree’ to 5 = ‘strongly agree’). Thus, a higher score indicated that respondents craft a less permeable boundary toward the focused domain, e.g., the work domain. In such a case, employees inhibit a spillover from, for example, negative emotions experienced outside of work to the work domain. The items were asked concerning the last four weeks. The original WNBC construct as a two-factor solution had a poor model fit ( $\chi^2(76) = 2055.731$ ,  $p < .001$ , CFI = 0.669, TLI = 0.602, RMSEA = 0.111, SRMR = 0.092). We suggest that the scale in its complete form is not fully applicable to participants’ situations at the onset of the pandemic. Therefore, the scale was shortened via an iterative, theory-based process based on the consensus of two raters (First and last author), and all authors agreed to the shortened version. We removed items referring to, e.g., physical crafting, vacations, and work goals, as during the pandemic, many employees worked from home, vacations were not possible, and we argue that work goals might not have been a priority in such uncertain times. For example, Kossek et al. (2021) identified in a qualitative study on women working in STEM jobs that they experienced substantial role demands associated with work and nonwork role sacrifice during the pandemic. Thus, adapting the original WNBC scale to represent the challenging and unique time more adequately at the onset of the pandemic resulted in a shortened scale of 8 items, four mirroring items for each of the two factors (see Appendix Table 3). Since each of the items that belong to a different crafting domain (e.g., work) share variance through a common crafting dimension (e.g., relational), four residual covariances for each of the mirroring items were added, resulting in a satisfactory model fit ( $\chi^2(15) = 99.859$ ,  $p < .001$ , CFI = 0.970, TLI = 0.944, RMSEA = 0.052, SRMR = 0.029). In allowing such residual covariances, we follow the approach taken by (Kerksieck et al., 2022) for the initial scale.

## Home-work-interaction and work-home-interaction

HWI and WHI (Kopelman et al., 1983) were assessed at wave 1 (stability control) and wave 2 (mediators in research model) with four and eight items from the Survey Work-Home Interaction – Nijmegen (Geurts et al., 2005). Items were anchored on a 4-point Likert scale (0 = ‘never’ to 3 = ‘always’). An example item for HWI is: ‘How often does it occur that problems with your spouse/family/friends affect your job performance?’ and for WHI, an example item is: ‘How often does it occur that you are irritable at home because your work is demanding?’. The higher the score, the more respondents experienced an interference between the work and home life domains.

## Mental well-being and work engagement

Mental well-being was assessed at wave 2 (stability control) and wave 3 (outcome in research model) with seven items from the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS; Tennant et al., 2007). The items refer to the last two weeks. An example item is: ‘I felt optimistic about the future’. The 5-point Likert scale ranges from 1 = ‘none of the time’ to 5 = ‘all of the time’, whereby a higher score indicated more mental well-being.

Work engagement was assessed at wave 2 (stability control) and wave 3 (outcome in research model) with nine items from the Utrecht Work Engagement Scale (UWES-9; Schaufeli et al., 2006). These include the three dimensions of vitality, dedication, and absorbedness. An example item is: ‘At my work, I feel bursting with energy.’ (dedication). The 7-point Likert scale ranges from 0 = ‘never’ to 6 = ‘always’, whereby a higher score reflects more work engagement.

## Data analysis strategy

The data was prepared and analyzed with the open-source statistical program R Project (R Core Team, 2020) and the R package lavaan (Rosseel, 2012). First, the data was processed and checked to see if any cases needed to be excluded, e.g., due to unemployment at the time of the survey. Because four constructs were included in the model from two points, measurement invariance was analyzed for these constructs using confirmatory factor analyses (CFA) and following the common recommendations for longitudinal analyses (Putnick & Bornstein, 2016). As a minimum requirement, metric measurement invariance (equal factor structure and factor loadings) referring to equal factor loadings across time should hold in longitudinal models (Putnick & Bornstein, 2016). Model fit indices were accepted if close to recommended cut-off criteria, e.g., Root Mean Square Error of Approximation (RMSEA < 0.06) or Comparative Fit-Index (CFI ≥ 0.95) (Hu & Bentler, 1999). Furthermore, model

comparison tests between the proposed measurement models against one-factor models were conducted for each wave. In the next step, the structural equation model was specified, and the hypotheses were tested using path estimates. Hypotheses 3.1a, 3.1b, 3.2a, and 3.2b, which predict a mediation effect, were also tested. Bootstrapping with 2,000 bootstraps was used as the calculation method, which, according to Hayes and Schar-kow (2013), is the most suitable procedure for indirect effects. For missing values, the full information maximum likelihood method was used (Arbuckle et al., 1996). After the results of the hypothesized associations, post hoc analyses were conducted to investigate hypotheses that did not turn out as expected.

## Results

Before specifying the full research model, we examined whether assumptions of measurement invariance hold for those constructs for which we control for stability in the model. For WHI together with HWI, the model with metric measurement invariance indicated a good model fit ( $\chi^2(244) = 1238.667$ ,  $p < .001$ , CFI = 0.955, TLI = 0.949, RMSEA = 0.044, SRMR = 0.040). For mental well-being and work engagement, the models with residual measurement invariance (additionally equal item intercepts and residual variances) fit the data well and superior to less strict assumptions (mental well-being:  $\chi^2(75) = 831.135$ ,  $p < .001$ , CFI = 0.940, TLI = 0.927, RMSEA = 0.078, SRMR = 0.046; work engagement:  $\chi^2(151) = 705.050$ ,  $p < .001$ , CFI = 0.982, TLI = 0.982, RMSEA = 0.047, SRMR = 0.020). Our final model reaches a good fit as well ( $\chi^2(1955) = 9421.085$ ,  $p < .001$ , CFI = 0.897, TLI = 0.894, RMSEA = 0.042, SRMR = 0.076).

The direct and indirect effects of the research model are presented in Table 2. First, we review the associations from WNBC to the life domain conflicts. The link between WNBC-work and HWI is significant ( $b = -0.047$ ,  $SE = 0.021$ ,  $p = .024$ ), but the link between WNBC-nonwork and WHI is not significant at  $a = 0.05$  ( $b = 0.018$ ,  $SE = 0.025$ ,  $p = .465$ ). Therefore, our results support H1.2, but not H1.1. Next, we review the associations of HWI and WHI with work engagement and mental well-being. Only the link between HWI and mental well-being is significant ( $b = -0.154$ ,  $SE = 0.066$ ,  $p = .018$ ), but all other hypothesized links are not significant (WHI to mental well-being:  $b = 0.002$ ,  $SE = 0.045$ ,  $p = .959$ ; HWI to work engagement:  $b = -0.181$ ,  $SE = 0.113$ ,  $p = .109$ ; WHI to work engagement:  $b = -0.096$ ,  $SE = 0.083$ ,  $p = .250$ ). Therefore, our results support H2.1a, but not H2.1b, H2.2a, or H2.2b. Lastly, we specified indirect effects from WNBC-work and -nonwork to

**Table 2** Direct and indirect effects of the research model

<i>Direct Effects (Standardized)</i>				
H	Path / Estimate	<i>b</i>	<i>SE</i>	
H1.1	WNBC nonwork w1 → WHI w2	0.018	0.025	
H1.2	WNBC work w1 → HWI w2	-0.047*	0.021	
H2.1a	HWI w2 → MWB w3	-0.154*	0.066	
H2.1b	WHI w2 → MWB w3	0.002	0.045	
H2.2a	HWI w2 → Work engagement w3	-0.181	0.113	
H2.2b	WHI w2 → Work engagement w3	-0.096	0.083	
	WNBC nonwork w1 → MWB w3	-0.013	0.059	
	WNBC nonwork w1 → Work engagement w3	-0.037	0.124	
	WNBC work w1 → MWB w3	0.145*	0.061	
	WNBC work w1 → Work engagement w3	0.371*	0.148	
	HWI w1 → HWI w2	0.797***	0.023	
	WHI w1 → WHI w2	0.824***	0.019	
	MWB w2 → MWB w3	0.766***	0.028	
	Work engagement w2 → Work engagement w3	0.784***	0.022	
<i>Indirect Effects</i>				
H	Path / Estimate	<i>b</i>	<i>SE</i>	<i>95%-CI</i>
H3.1a	WNBC nonwork → WHI → Work engagement	-0.001	0.002	[-0.005, 0.002]
H3.1b	WNBC nonwork → WHI → MWB	0.000	0.002	[-0.004, 0.003]
H3.2a	WNBC work → HWI → Work engagement	0.002	0.002	[-0.002, 0.006]
H3.2b	WNBC work → HWI → MWB	0.004	0.003	[-0.002, 0.009]

WNBC = Work nonwork balance crafting, WHI = work-home interaction, HWI = home-work interaction, MWB = Mental well-being, w1 = Wave 1, w2 = Wave 2, w3 = Wave 3. \*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

work engagement and mental well-being via life domain conflicts. We obtained these results by bootstrapping our research model (no. of bootstraps = 2000). No significant indirect effects emerged as all 95% confidence intervals include zero (see Table 2 for full results). Therefore, our results do not support the hypotheses H3.1a, H3.1b, H3.2a, or H3.2b.

Interestingly, the autoregressive paths of both WHI ( $b = 0.824$ ,  $SE = 0.019$ ,  $p < .001$ ) and HWI ( $b = 0.797$ ,  $SE = 0.023$ ,  $p < .001$ ) were relatively stable between the two waves, as were the autoregressive paths of mental well-being ( $b = 0.766$ ,  $SE = 0.028$ ,  $p < .001$ ) and work engagement ( $b = 0.784$ ,  $SE = 0.022$ ,  $p < .001$ ). The discussion examines how this high stability, especially of life domain conflicts, could help explain the results.

Furthermore, although no hypotheses were formulated for the direct association between the WNBC facets and the outcomes, the paths were also specified in the structural equation model. Direct paths between WNBC-work at wave 1, mental well-being at wave 3, and work engagement at wave 3, resp. WNBC-nonwork at wave 1, mental well-being at wave 3, and work engagement at wave 3 were specified. Results show a significant positive association between WNBC-work and work engagement ( $b = 0.371$ ,  $SE = 0.148$ ,  $p = .012$ ) and WNBC-work and mental well-being ( $b = 0.145$ ,  $SE = 0.061$ ,  $p = .018$ ). No significant associations were found for WNBC-nonwork and work engagement ( $b = -0.037$ ,  $SE = 0.124$ ,  $p = .763$ ), nor WNBC-nonwork and mental well-being ( $b = -0.013$ ,  $SE = 0.059$ ,  $p = .828$ ).

## Discussion

We aimed to explore the role of WNBC during the COVID-19 pandemic and its longitudinal associations with mental well-being and work engagement via WHI and HWI. For our study, we referred to survey data that captured a significant part of 2020, where the onset of the pandemic and two lockdowns had major implications for the lives of many employees. Therefore, our study provides valuable information on how behavior early in the pandemic is associated with long-term health and well-being. This section discusses our main findings concerning their theoretical and practical contributions.

### WNBC and life domain conflicts during the COVID-19 pandemic

We hypothesized that WNBC-work is negatively associated with HWI and WNBC-nonwork with WHI, but our results only support the first relationship (support for H1.2, but not H1.1). Considering the unique context of the pandemic, mandatory work reductions or increased workload were previously found to be associated with a perceived negative impact of the pandemic on work-life (Tušl et al., 2021), which might have overshadowed and impaired individual efforts. This shows that to address WHI, individual efforts were not enough, and employees were in high need of support from organizations, e.g., through more flexibility. On



the other hand, individual efforts to protect the work domain prevented HWI, highlighting that employees can effectively support themselves in this area.

Further, we discuss two additional aspects that might have played a role in these findings. First, we note the relatively high stability of the life domain conflicts that emerged in our analyses. WHI and HWI turned out to be more stable than expected between wave 1 and wave 2, meaning that people's perceived life domain conflicts between April and June/July hardly changed. This leaves little room for individual efforts such as crafting to explain remaining variance. Considering shorter timeframes to investigate the association between WNBC and life domain conflicts might be useful. Potentially, individual crafting has a more nuanced effect on life domain conflicts on a shorter, weekly to monthly basis, whereas, in more extended periods, more stable trends occur. Indeed, previous research points to short-term fluctuations in life domain conflicts, predicted by, e.g., daily workload (Ilies et al., 2007), but higher mean stability over mid- to long-term time frames (Smith et al., 2022). Similar stabilities have been reported when comparing pre-pandemic and pandemic levels of work-family conflict (Bernhardt et al., 2023; Reimann et al., 2022). Thus, we suggest that future research on the association of WNBC and life domain conflicts also considers shorter time frames.

Within our study, we used a shortened 8-item version of the WNBC-scale that better fits the context of the pandemic than the original full scale. During the iterative, theory-driven, and two-person consensus-based process, aspects of the initial scale were dropped, e.g., the aspect of crafting a physical boundary. The original scale incorporated physical WNBC as, e.g., an earlier or later start to work if needed due to obligations outside of work (Kerksieck et al., 2022). During the pandemic, employees may have adopted other crafting strategies, such as going grocery shopping during working hours to avoid big crowds and, therefore, limit the spread of covid viruses. Furthermore, some of the items that were omitted for the shortened scale included strategies that were thought to be deprioritized due to the crisis. For example, one item describes a cognitive/emotional strategy in which employees temporarily emphasize their work (e.g., work more before vacations to get things done; Kerksieck et al., 2022). Since the pandemic and its lockdown measures caused a shift in focus and impeded travelling plans, vacations were not a well-suited example during this time of crisis. In modern working times, such behaviors and possible scenarios should also be considered and captured by a revised WNBC scale.

The shortened WNBC scale focuses mainly on cognitive crafting. Therefore, we can also interpret our findings regarding the specific aspects of crafting retained in the

scale: To prevent HWI, aspects of cognitive crafting are quite important. However, more action-oriented or social crafting strategies, such as communicating with others, might play a more vital role in preventing WHI. As these aspects are not reflected in our shortened scale, this might explain the absence of a link between WNBC-nonwork and WHI. However, communicating with others to secure boundaries between work and nonwork was reported as the least often used strategy by parents working from home in a study by Allen et al. (2021). Considering that the pandemic likely had lasting impacts on the accelerated new work movement, a revised balance crafting scale could be helpful to represent better the post-pandemic work context (Kniffin et al., 2021; Rudolph et al., 2021). Lastly, future use of our shortened scale would provide more information on its validity and reliability measures (Clark & Watson, 2016).

### **Life domain conflicts, work engagement, and mental well-being**

Partly in line with previous findings (e.g., Karatepe & Karadas, 2016), we only found a significant association between HWI and mental well-being (supporting H2.1a, but not H2.1b, H2.2a, or H2.2b). Therefore, employees who experienced high levels of HWI in the middle of 2020 reported lower mental well-being at the end of 2020, highlighting them as an at-risk group in need of further support. For those employees whose life outside of work was affecting their work life, organizational support might be highly relevant, e.g., by providing appropriate flexibility and autonomy or reviewing projects and workload (Kosseck et al., 2021). However, work engagement was not longitudinally associated with HWI, and neither was WHI with the health outcomes we reviewed. The unique context of the pandemic needs to be considered and might provide possible explanations. Research highlighted that compared to pre-pandemic states, life domain conflicts, and other stressors increased (Reimann et al., 2022). The WHO reported that from the onset of the pandemic onwards, the prevalence of mental health issues (e.g., anxiety) rose, yet at the same time also the awareness of mental health issues (World Health Organization, 2022). In milder cases, the open discussion of risk factors such as life domain conflicts and stressors might have equipped employees with more coping tools (Pfefferbaum & North, 2020), therefore limiting the effect of life domain conflicts on work engagement and mental well-being. Accordingly, research also found a growing resilience in mental health of the population in response to the pandemic (Daly & Robinson, 2021).

## WNBC and long-term health and well-being during the pandemic

Lastly, we assumed a longitudinal link between WNBC, work engagement, and mental well-being via life domain conflicts. Our results do not support such an indirect effect (H3.1a, H3.1b, H3.2a, H3.2b), but we found direct significant links between WNBC-work and both outcomes. Considering the complex, differentiated associations between WNBC with the life domain conflicts and the life domain conflicts with the health outcomes, it is unsurprising that we did not find an indirect effect. The significant relationship between WNBC-work and work engagement over eight months is in line with a previous finding, which showed the same association for a three-month period (Kerksieck et al., 2022). Thus, we corroborate the longitudinal association, but the effect is not mediated by life domain conflicts, as was assumed in the hypotheses of this study. It is unknown whether this finding might be caused by a lagged or a cumulative effect or if interpersonal differences in traits, such as identification with one's job, are responsible for this association between eight months. Identification with one's job could explain why those employees who emphasized protecting their work domain also report higher work engagement, as for both the proactive behavior and high work engagement, a high priority of work might be a driver. Future research should corroborate this finding using different time lags and investigate potential third-variable explanations.

Further, as we could not shed light on a longitudinal mechanism explaining the association between WNBC and health outcomes, we suggest that future research dives into alternative mediating processes, reviewing gain spirals instead of a loss spiral, as we did in our research. Like the loss spiral, the gain spiral can be derived from the COR theory (Hobfoll, 1989). It describes a process where an initial resource gain enables further resource gains, leading to an upward spiral (Hobfoll, 2002). If, for example, a person can save time by working from home (because they do not have to commute), they can then use that time to gain other resources, such as energetic resources through recovery. Tims et al. (2015) have found that through job crafting, employees can improve their well-being (e.g., more work engagement, more job satisfaction, less burnout) through increased social job resources. Therefore, this relationship might apply to WNBC because persons who actively craft their boundaries between the work and the nonwork domains can improve their outcomes through increased resources (e.g., measured by work-home enrichment instead of interference; Kopelman et al., 1983). Thus, looking at WNBC and its association with the gain spiral instead of the loss spiral could be a promising next step to understanding the WNBC construct from a resource perspective.

## Strengths and limitations

The research of this paper contributes to the existing literature in three main ways: First, it extends the literature by looking at a relatively new crafting construct that still offers a high research potential. We demonstrate here that a shortened version of the WNBC provides a good fit with the unique context of the pandemic, yet also that the structure of WNBC could be subject to revision in future research. Second, our study shows that WNBC partly played a role in reducing life domain conflicts at the beginning of the pandemic, which points to a strategy that could be taken up by early interventions in future times of crisis, as well as the limits of individual proactive behaviors. For the work domain, individual efforts should be coupled with organizational support to reduce life domain conflicts. Third, our study adds knowledge on the longitudinal association between life domain conflicts and health outcomes, showing that contrary to earlier findings, only HWI was associated with lower mental well-being in our study. This opens a field for new research in which the unique context of the pandemic and specific developments could be reviewed. For example, the overall more open conversation about struggles might have aided in buffering the effects of life domain conflicts on health (Bu et al., 2021).

Besides these strengths, the study has several limitations. The first limitation that needs to be addressed is the inability to use the full scale for WNBC due to its low fit. As outlined earlier, we attempted to increase fit in terms of both content validity to the pandemic context and statistical fit. Our shortened scale highlights those generalizable parts of WNBC that also fit the unique context of the COVID-19 pandemic, but we note that other parts still need to be included. To address this, further research is required to corroborate the shortened scale or revise the original scale to fit newer developments in working life.

Second, our study solely relies on data collected in 2020, and our findings cannot be lightly generalized to other non-pandemic periods or populations. Contrary to previous research, we did not find a link between WHI and studied health outcomes. We discussed earlier that this could be due to the unique context of the pandemic, in which the increased collective awareness about the daily struggles employees faced might have also increased awareness and individual ways of coping. To shed more light on this assumption, these findings should be corroborated in other (milder) times of crisis, e.g., financial crises or severe organizational changes, and outside of exceptional circumstances. Further, our sample consists solely of German-speaking employees from Germany, Austria, and Switzerland. Our findings may not be generalizable to other cultural contexts, e.g., more feminine cultures such as Finland (Hofstede, 2016). For the original WNBC scale, a cross-cultural validation has been conducted, which also showed a longitudinal correlation between WNBC-nonwork and work engagement in Finland, likely due to the restoration and spillover of relevant resources (Kerksieck et al.,

2022). In similar fashion, future research should investigate further cultural differences in the associations between WNBC, life domain conflicts, and employee well-being.

Lastly, we note that in the dropout analysis, a significant difference was found for life domain conflicts, meaning that out of all participants participating in wave 1, those that did not participate in waves 2 and 3 reported significantly more life domain conflicts, likely because they had less time or energy for study participation. However, the remaining sample should still be representative, and severely biased results are not expected because of this dropout, especially since missing values were treated with the reliable full information maximum likelihood method in which the parameters are estimated using the available data in the sample (Newman, 2014).

## Practical implications

We can derive two main practical implications from our findings, primarily concerning political and organizational institutions. First, we have found that WNBC focusing on the work domain is longitudinally associated with lower HWI, higher work engagement, and mental well-being. In times of crisis, organizations can support their employees in crafting by disseminating information about how proactive crafting can aid them in maintaining their own well-being. On top of that, organizations should enable employees to use these strategies for their own benefit. In any case, employees can proactively enact crafting efforts to improve their work and nonwork lives. Taking advantage of this bottom-up self-management strategy is what makes crafting a convincing concept in theory and practice since its early outlines (Wrzesniewski & Dutton, 2001) to a concept with obvious relevance during the COVID-19 pandemic and for the future of work (Bakker et al., 2023; Tims et al., 2022).

Second, our results also point to the limits of individual crafting. WNBC might not have enough force to reduce WHI, which could instead be addressed through support in organizing work and granting flexibility and autonomy. Other forms of crafting interventions, e.g., targeted toward job crafting (van den Heuvel et al., 2015; van Wingerden et al., 2017) or off-job/needs crafting (Kosenkranius et al., 2023; Laporte et al., 2022), as well as targeted organizational support for employees, should be considered to complement pandemic or crisis mitigation plans.

## Conclusion

We aimed to study the role of WNBC for long-term health and well-being during the COVID-19 pandemic. Using a shortened version of the WNBC scale to fit the context of the pandemic, our results point to complex associations between WNBC and

life domain conflicts, work engagement, and mental well-being. We found a direct positive association between WNBC-work and work engagement and mental well-being and a negative association between WNBC-work and HWI, yet no indirect association between WNBC-work and WNBC-nonwork with work engagement and mental well-being via life domain conflicts. We conclude that engaging in WNBC early in times of crisis is associated with better long-term health. This urges companies to take responsibility and support their workers by providing a crafting-friendly environment and helping reduce their life domain conflicts. Our findings are not only relevant during future crises but also to support employees in the future of work.

## Appendix

**Table 3** Work-nonwork balance crafting (WNBC) scale

Item	Crafting Dimension
WNBC-work	
1 If I must get personal chores done during working time, I make sure that my work won't be negatively affected	Cognitive / Emotional
2 I try hard to meet my professional obligations, even if I'm demanded strongly by my private life	Cognitive / Emotional
3 When I'm in a bad mood because of personal matters, I try not to let this affect my work environment	Relational
4 I make sure that I can enjoy the pleasant aspects of my work, even though I'm strongly demanded by my private life	Relational
WNBC-nonwork	
5 If I must get work chores done during leisure time, I make sure that my personal life won't be negatively affected	Cognitive / Emotional
6 I try hard to meet my private obligations, even if I'm demanded strongly by my work	Cognitive / Emotional
7 When I'm in a bad mood because of work matters, I try not to let this affect my personal environment	Relational
8 I make sure that I can enjoy the time with my partner, my family, or my friends even though I'm strongly demanded by my work	Relational

For this study, the German translation of the scale was used. As described in the main text, the original 16-item scale was shortened to an 8-item scale to more adequately depict the pandemic situation the participants were in. The scale and the item's categorization into the work and nonwork domain, resp. the different crafting dimensions were taken from Kerksieck et al. (2022). The response format corresponds to a 5-point Likert scale (1 = 'strongly disagree' to 5 = 'strongly agree'). The construct was asked in relation to the last four weeks

**Author contribution** SB: Conceptualization, Project administration, Formal analysis, Methodology, Visualization, Writing – original draft, Writing – review and editing. PK: Conceptualization, Data curation, Supervision, Writing – review and editing. GB: Conceptualization, Data curation, Funding Acquisition, Supervision, Writing – review and editing. AM: Conceptualization, Project administration, Formal analysis, Methodology, Supervision, Visualization, Writing – review and editing.

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**Data availability** The data that support the findings of this study are available from the authors upon reasonable request. Study participants were asked to give consent to use the data for research and within research publication, but not for open public access.

## Declarations

**Informed consent** Informed consent was given by study participants upon starting the surveys.

**Ethical approval** For this study, no ethical approval based on the author's institute's regulations in accordance with Switzerland's Federal Act on Research Involving Human Beings (Human Research Act, HRA) was required (further information are available: <https://www.uzh.ch/en/researchinnovation/ethics/humanresearch.html>). This observational study collected anonymized data through a panel provider and did not assess any health-related data. Further, the data collection did not present any psychological distress to participants or use any form of experimental manipulation.

**Conflicts of interest** All authors declare no conflicts of interest.

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