

The Impact of Job Crafting on Job Demands, Job Resources, and Well-Being

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This longitudinal study examined whether employees can impact their own well-being by crafting their job demands and resources. Based on the Job Demands–Resources model, we hypothesized that employee job crafting would have an impact on work engagement, job satisfaction, and burnout through changes in job demands and job resources. Data was collected in a chemical plant at three time points with one month in between the measurement waves ($N = 288$). The results of structural equation modeling showed that employees who crafted their job resources in the first month of the study showed an increase in their structural and social resources over the course of the study (2 months). This increase in job resources was positively related to employee well-being (increased engagement and job satisfaction, and decreased burnout). Crafting job demands did not result in a change in job demands, but results revealed direct effects of crafting challenging demands on increases in well-being. We conclude that employee job crafting has a positive impact on well-being and that employees therefore should be offered opportunities to craft their own jobs.

Keywords: burnout, job crafting, job demands–resources, longitudinal, well-being, work engagement

In the last 50 years, many studies have shown that the work environment can have a major effect on employee well-being. Prolonged exposure to high job demands often coincides with reduced well-being. For example, work overload, time pressure, and emotional demands have been observed to have a positive relationship with burnout (Alarcon, 2011; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). By contrast, job resources generally have a favorable effect on well-being. Resources such as job control, social support, learning opportunities, and performance feedback have been observed to have a positive effect on work engagement (Bakker, 2011; Bakker, Schaufeli, Leiter, & Taris, 2008) and job satisfaction (Sousa-Poza & Sousa-Poza, 2000).

Based on these findings, job redesign interventions have aimed to improve employee well-being by optimizing the balance between job demands and resources. Therefore, modifications in job characteristics mediate the relationship between job redesign interventions and employee well-being (Holman, Axtell, Sprigg, Totterdell, & Wall, 2010). Until recently, changes in job characteristics have typically been studied using a top-down approach that focuses on managerial job redesign interventions (Holman et al., 2010). However, employees may also influence their own job characteristics (Wrzesniewski & Dutton, 2001). The goal of the present longitudinal study is to focus on employee initiatives to change job demands, improve resources, and enhance well-being.

Understanding how employees create a resourceful work environment for themselves has become increasingly important due to

current changes in the organizational landscape. Technological advances have exposed an increasing number of employees to new forms of working. Teleworking, for example, allows employees to work at home but results in less face-to-face interaction with colleagues (Golden, Veiga, & Dino, 2008). Teleworking employees may therefore need to initiate meetings to sustain access to their social resources. In addition, careers are currently thought to be the responsibility of the individual (Grant & Parker, 2009). Therefore, employees must indicate their needs or goals, such as training opportunities or promotions (Crant, 2000; Grant & Ashford, 2008). In sum, employees must be able to create a work environment that enables them to achieve both their work and personal goals. Management can also benefit greatly from a better understanding of the effect of employee job redesign on employee well-being. Management interventions are costly and time-consuming (Dugdill & Springett, 1994) and may not address every individual's specific needs. An employee-driven approach to job redesign may be better able to meet these personal needs and preferences while using fewer resources (e.g., time and money).

Job Crafting

Job crafting is a concept that explicitly focuses on employee job redesign (Wrzesniewski & Dutton, 2001). In job crafting, employees independently modify aspects of their jobs to improve the fit between the characteristics of the job and their own needs, abilities, and preferences (Berg, Dutton, & Wrzesniewski, 2008). According to Wrzesniewski and Dutton (2001), employees may initiate three types of changes in their jobs. First, employees may craft the tasks they must fulfill at work. For example, an employee could ask for different tasks at work that require new skills because (s)he feels that the job is becoming monotonous. Second, employees may craft the interpersonal relationships they experience when performing their work. For example, an employee may regularly meet with a colleague s(he) considers inspiring. Third, employees may craft their own cognitive stance toward their work by posi-

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tively reframing the manner in which they think about (aspects of) the job. An employee engages in the third type of job crafting when (s)he considers a specific task boring but reframes this task as boring but important. The task does not change, but the employee views it in a more positive manner. These changes allow employees to make their work more engaging and meaningful (Tims & Bakker, 2010; Wrzesniewski & Dutton, 2001).

Because job crafting involves initiating changes in the job design, it is operationalized according to the types of job characteristics suggested in the Job Demands–Resources (JD-R) model (Bakker & Demerouti, 2007; Demerouti et al., 2001): job demands and job resources (see also Tims, Bakker, & Derks, 2012). Job characteristics that require sustained effort from employees and are, therefore, associated with certain costs are labeled *job demands*. Job characteristics that contribute toward achieving work-related goals, reducing the effect of job demands and associated costs, and stimulating personal development are called *job resources*. This distinction allows the model to be applied to many occupations and jobs. Moreover, this distinction allows researchers to assess which job characteristics employees change when they craft their jobs. In line with the JD-R model, job crafters change either the level of job demands, the level of job resources, or both.

In this study, we incorporate Van den Broeck, De Cuyper, De Witte, and Vansteenkiste's (2010) distinction between challenging and hindering job demands within the JD-R model. These authors aimed to explain why some job demands have been found to be related to positive outcomes and others to negative outcomes. For example, time pressure or workload was significantly and positively related to work engagement in several studies (see Bakker, Van Emmerik, & Euwema, 2006; Sonnentag, 2003). These demands are called *challenging demands*. Although challenging demands require extra effort to meet, employees react positively to them. Employees view these demands as leading to personal gain or growth when they are able to surmount them (Lazarus & Folkman, 1984).

Hindering job demands, in contrast, are appraised as stressful because they unnecessarily thwart personal growth and goal attainment and hinder optimal functioning (LePine, Podsakoff, & LePine, 2005). Employees initially attempt to withstand these hindering demands, sometimes by investing more resources. When employees experience these health-threatening demands for a prolonged period of time, they eventually require other coping methods. Because these demands are associated with negative emotions, employees may withdraw from work or decrease their work speed (Schaufeli & Taris, 2005).

Using the refined JD-R model, Tims et al. (2012) recently distinguished empirically between four job crafting dimensions. Two of these dimensions refer to the type of job resources that are crafted: structural (e.g., autonomy and variety) and social job resources (e.g., social support and feedback). The other two dimensions refer to the level of job demands: challenging (e.g., new projects) and hindering job demands (e.g., fewer cognitive demands). As mentioned above, job crafting research has yet to determine whether employees who report crafting their jobs also report a change in their level of job demands and resources (e.g., Oldham & Hackman, 2010). The present study seeks to provide empirical evidence for the theoretical assumption that employees affect their job demands and resources through job crafting (Tims & Bakker, 2010). Crafting more social job resources, for example,

should result in an increase in the reported level of these job resources over time.

Increases in Job Resources Predict Increases in Well-Being

Based on the JD-R model, which proposes that job resources are motivational (Bakker, 2011; Demerouti et al., 2001), we expect that employees who increase their job resources will experience higher levels of work engagement. Work engagement is defined as an active, positive, work-related state characterized by vigor, dedication, and absorption. Vigor is characterized by high levels of energy, willingness to put effort into the job, and persistence in the face of difficulties. Dedication implies enthusiasm and to feel challenged by the job. Absorption is the quality of being fully concentrated and focused on the job. We also include job satisfaction because it is the most common operationalization of work-related well-being (Blanchflower & Oswald, 1999). A cross-national study that examined the determinants of job satisfaction (Sousa-Poza & Sousa-Poza, 2000) supports our claim that job resources may fuel job satisfaction. The study showed that the most important determinants of job satisfaction were interesting work, good relationships with managers and colleagues, high salaries, and independent work.

Although work engagement and job satisfaction are both predicted by job resources, they are different concepts (Aларcon & Lyons, 2011). Based on the circumplex model of affect (Posner, Russell, & Peterson, 2005), these constructs can be mapped onto two affective dimensions. The first dimension ranges from pleasure to displeasure, and the second dimension ranges from active to inactive. An engaged employee experiences high levels of pleasure and activation, whereas a satisfied employee is characterized by high levels of pleasure and inactivation (Bakker & Oerlemans, 2011). These dimensions allow researchers to conceptualize various aspects of employee well-being.

Work engagement and job satisfaction may increase as a consequence of job crafting because employees can shape their job demands and resources to meet their own preferences and needs. The idea that changes in job characteristics affect employee well-being is not new. For example, Hackman, Pearce, and Wolfe (1978) examined the effect of a job redesign intervention on the well-being of employees in a large work unit. The employees' jobs had been redesigned because of technological innovations. As a result, some jobs became more complex and challenging while others became simpler and less challenging or did not change. The results of the study showed that employees whose jobs were enriched reported higher scores 6 months later for the following job resources: skill variety, task identity, task significance, autonomy, and feedback. In addition, this group also reported higher scores on general satisfaction with the job, internal work motivation, and growth satisfaction. By contrast, the employees whose jobs were "de-enriched" scored lower on the same job resources 6 months later and showed decreased levels of job satisfaction, internal work motivation, and growth satisfaction. Minimal change was observed in the group whose job characteristics did not change substantially during the redesign period.

More recently, Schaufeli, Bakker, and Van Rhenen (2009) conducted a two-wave longitudinal study among managers showing that changes in job resources contributed to changes in employee

well-being. They found that an increase in social support, autonomy, opportunities to learn, and performance feedback resulted in greater work engagement 1 year later. Therefore, when job resources increased, job satisfaction, work engagement, and intrinsic work motivation also tended to increase.

Finally, we include burnout in our model as a negative indicator of employee well-being. High levels of job resources protect employees from burnout (Bakker, Hakanen, Demerouti, & Xanthopoulou, 2007; Nahrgang, Morgeson, & Hofmann, 2011) because having access to larger pools of resources allows employees to fulfill job demands and protect themselves from strain. Burnout is operationalized by its two core dimensions: exhaustion and cynicism/disengagement (Demerouti, Bakker, Vardakou, & Kantas, 2003; Schaufeli & Taris, 2005). *Exhaustion* is defined as work-related fatigue resulting from prolonged exposure to certain job demands. Cynical employees distance themselves from their work and experience negative attitudes toward the work object, work content, or their work in general (Demerouti et al., 2003). We expect that employees who craft more job resources experience lower levels of burnout because they are better able to achieve their job tasks. A study by Schaufeli et al. (2009) showed that a decrease in job resources resulted in increased burnout one year later. This result suggests that high levels of job resources may play a role in preventing burnout.

Hypothesis 1: Crafting structural job resources results in an increase in structural job resources, which predicts increased well-being.

Hypothesis 2: Crafting social job resources results in an increase in social job resources, which predicts increased well-being.

Changes in Job Demands Predict Changes in Well-Being

In previous sections, we focused on the beneficial effects of job resources on well-being. However, job demands also play a role in predicting employee well-being (see Karasek, 1985). Challenging job demands are responded to actively and in a solution-oriented manner (LePine et al., 2005). This appraisal process and the resulting behavioral response may explain the positive relationship between challenging job demands and work engagement. Therefore, although challenging demands require hard work from the employee, (s)he is motivated to work hard because the result is expected to be rewarding. However, this expectation does not prevent the employee from feeling tired as they exert the necessary extra effort. A meta-analysis by Crawford, LePine, and Rich (2010) supports the argument that challenging demands are positively associated with both work engagement ($\rho = .21, p < .05$) and burnout ($\rho = .10, p < .05$). By contrast, Van den Broeck and colleagues (2010) observed that job challenges were unrelated to exhaustion. They suggested that these challenges require extra effort and elicit fatigue but do not have an energy-depleting effect that causes employees to become completely exhausted. In addition, a meta-analysis by Podsakoff, LePine, and LePine (2007) showed that challenging job demands were positively related to job satisfaction.

Hypothesis 3: Crafting challenging job demands results in an increase in challenging demands, which predicts increased well-being.

Conversely, hindering job demands are considered stressful because they unnecessarily thwart personal growth and goal attainment and hinder optimal functioning (LePine et al., 2005). Previous studies have shown that hindering job demands may be related to burnout because employees must invest considerable resources to cope with these demands (Hakanen, Schaufeli, & Ahola, 2008; Schaufeli et al., 2009). In this study, we focus on the process by which employees proactively decrease their level of hindering demands. Doing so may allow employees to restore their energy levels and focus their efforts on their core work tasks, which may decrease their level of burnout and increase their levels of work engagement and job satisfaction. For example, when experiencing excessive cognitive demands, employees may improve their job characteristics by revising their work methods and schedules (Bunce & West, 1996).

Hypothesis 4: Crafting hindering job demands results in a decrease in hindering demands, which predicts increased well-being.

Method

Procedure and Participants

The study was conducted in a chemical plant in The Netherlands. The plant produces plastics for several industries, including the automotive and health care industries. During the study period, the management made no formal changes to the employees' jobs. All employees ($N \approx 1,250$) were informed of the study via the intranet. Every employee then received an e-mail that described the aims of the study, emphasized confidentiality, and provided a personal login code. The e-mail also provided a link to the survey used to collect the data. The study had a three-wave design; 1 month intervened between each wave. At T1, the employees' job demands and resources and their levels of work engagement, job satisfaction, and burnout were measured. After completing the survey, all participants received anonymous standardized feedback (generated by a computer) containing their job demands and resources scores. The purpose of the feedback was to inform participants of their level of job demands and resources. The feedback was accompanied by short examples illustrating how employees could improve their level of job demands or resources. For example, one suggestion for increasing social job resources recommended that employees eat lunch with other employees or meet with other employees for social drinks after work. Importantly, it was not directly stated that the employee should act on these suggestions. This ensured that the job crafting we investigated remained personally initiated by the employee. At T2, we assessed employee job crafting during the first month. At T3, we repeated the initial survey.

At T1, the survey was completed by 564 (45.1%) employees. At T2, the number of participants was 468 (37.4%). At T3, the survey was completed by 477 (38.1%) employees. Because of the dropouts, not all participants could be matched to earlier measurement waves. Therefore, the final sample comprised 288 participants who

had completed each wave of the survey (a response rate slightly higher than 23%). Consistent with the general distribution of gender within the organization, most of the participants were male (82.6%). The mean age of employees was 45.19 years ($SD = 8.71$), and the mean tenure was 18.31 years ($SD = 9.95$). On average, participants worked 39.15 hours a week ($SD = 6.81$). Of the respondents, 15% had a primary/secondary education, 40% had a vocational education, and 45% had a university or college degree.

A comparison of the dropouts and those who completed all three surveys revealed no significant differences in the above-reported demographic variables between the two groups. In addition, no differences were observed with regard to the study variables, which suggested that dropouts were not a concern in our study.

Measurement Instruments Used at Time 1 and Time 3

Unless otherwise indicated, all job resource and job demand items were scored on a 5-point scale ranging from 1 (*never*) to 5 (*always*). The responses were coded such that high scores indicated high job resources and demands.

Structural job resources. To examine structural job resources, autonomy, variety, and opportunities for development were measured. *Autonomy* was assessed using a 3-item scale (Bakker, Demerouti, Taris, Schaufeli, & Schreurs, 2003) that included items such as, “Do you have flexibility in the execution of your job?” Reliability at T1 and T3 was .84. *Variety* was assessed using five items from the Dutch Questionnaire on the Experience and Evaluation of Work, which was developed by Van Veldhoven and Meijman (1994). Participants respond to questions such as, “Do you repeatedly do the same things in your work?” The reliability was .77 at T1 and .81 at T3. *Opportunities for development* was assessed using six items (Bakker et al., 2003). The following is a typical item from this scale: “My work offers me the opportunity to learn new things.” Reliability was .92 at T1 and .90 at T3.

Social job resources. To examine social job resources, social support, feedback, and coaching were measured. *Social support* was measured using a 3-item scale (α T1 = .79; α T3 = .82) that included items such as, “If necessary, can you ask your colleagues for help?” (Bakker et al., 2003). *Feedback* was also assessed using a 3-item scale (Bakker et al., 2003). A sample item from this scale reads, “I receive sufficient information about the results of my work.” Reliability was .85 at T1 and .86 at T3. *Coaching* was assessed using a 5-item Dutch adaptation (Le Blanc, 1994) of Graen and Uhl-Ben’s (1991) Leader-Member Exchange Scale (α T1 and T3 = .92). An example item from this scale includes, “My supervisor uses his or her influence to help me solve my problems at work.”

Challenging job demands. *Workload* was treated as a challenge demand in this study. It was measured using a Dutch version (Furda, 1995) of Karasek’s (1985) job content instrument. The scale includes three items (e.g., “Do you have to work quickly?”). Cronbach’s alpha was .94 at T1 and .95 at T3.

Hindering job demands. The following two hindering job demands were measured at T1 and T3: *cognitive demands* (four items; α T1 = .84; α T3 = .85) and *emotional demands* (three items; α T1 = .62; α T3 = .60; Van Veldhoven & Meijman, 1994). An example of a cognitive demand item includes, “Do

you have to be very precise in your work?” An example of an emotional demand item includes, “Does your work put you in emotional situations?” We addressed the low reliability of the emotional demands measure by examining whether deleting an item would result in a higher reliability score. The correlation between the two remaining items was .44 at T1 and .45 at T3. This 2-item scale was used in our analyses.

Work engagement was measured using the short 9-item version of the Dutch Utrecht Work Engagement Scale (UWES; Schaufeli, Bakker & Salanova, 2006). The UWES items reflect three underlying dimensions, which are measured by three items each: *vigor* (e.g., “At my work, I feel bursting with energy”), *dedication* (e.g., “My job inspires me”), and *absorption* (e.g., “I get carried away when I am working”). Participants responded on a 7-point scale ranging from 0 (*never*) to 6 (*always*). Cronbach’s alpha was .92, .95, and .83 for vigor, dedication, and absorption, respectively at T1 and .93, .95, and .85 for vigor, dedication, and absorption, respectively at T3.

Job satisfaction was measured using three items that closely correspond with those in the Michigan Organizational Assessment Questionnaire (MOAQ; Cook, Hepworth, Wall, & Warr, 1981). The items included, “I am satisfied with my current work,” “Generally speaking, I’m really satisfied with my job,” and “Usually, I really enjoy my work.” The items were scored on a 5-point scale ranging from 1 (*totally disagree*) to 5 (*totally agree*). Cronbach’s alpha was .94 at T1 and .95 at T3.

Burnout was measured using the Oldenburg Burnout Inventory (OLBI; Demerouti et al., 2003). The OLBI includes eight items to measure *exhaustion* (α T1 = .84; α T3 = .84; e.g., “After work, I usually feel worn out and weary”). The *cynicism* subscale also comprises eight items (α T1 = .87; α T3 = .86; e.g., “I increasingly speak negatively about my work.”). The items were scored on a 4-point scale ranging from 1 (*totally disagree*) to 4 (*totally agree*).

Measurement Instrument Used at Time 2

Job Crafting was measured using 21 items from the Job Crafting Scale developed by Tims et al. (2012). We adapted the items to refer to job crafting activities that employees had engaged in during the previous month because we were interested in the job crafting that took place after the participants completed the T1 survey. The first dimension measures the crafting of structural job resources (five items, $\alpha = .78$; e.g., “Last month, I tried to learn new things at work.”). The second dimension measures the crafting of social job resources (five items, $\alpha = .82$; e.g., “Last month, I asked colleagues for advice.”). The third dimension measures increases in challenging job demands (five items, $\alpha = .81$; e.g., “Last month, I tried to start new projects at work when there was not much to do.”). The fourth dimension measures decreases in hindering demands (six items, $\alpha = .80$; e.g., “Last month, I organized my work such that I did not have to concentrate for too long a period at once.”). Participants responded on a 5-point Likert scale ranging from 1 (*never*) to 5 (*very often*). The confirmatory factor analysis (CFA) showed an adequate fit for the four-factor model: $\chi^2 = 407.29$, $df = 182$, CFI = .91, RMSEA = .07, SRMR = .06.

Data Analysis

To test our hypotheses, we used AMOS to perform structural equation modeling (SEM) with maximum likelihood estimation (Arbuckle, 2005). In addition to the chi-square statistic (χ^2), the analysis assessed the root mean square error of approximation (RMSEA), the comparative fit index (CFI), and the standardized root-mean-square residual (SRMR) (Kline, 2005). The conventional cut-off values of these fit indices were used to assess the model fit (i.e., CFI > .90, RMSEA < .06, and SRMR < .08; Marsh, Hau, & Wen, 2004).

The scale items were treated as indicators of the latent variable (job crafting). With regard to the latent change variables (job resources, job demands, work engagement, job satisfaction, and burnout), we first calculated the mean score of each variable and then calculated the change scores for each variable. Williams, Zimmerman, and Mazzagatti (1987) showed that residualized change scores have substantially higher reliability than simple difference scores because they are uncorrelated with the initial T1 score. The residual change score is the component of the score that could not be predicted from the baseline scores. Moreover, the residual change score is a method of singling out individuals who changed more (or less) than expected (Cronbach & Furby, 1970). The standardized residual was used as the indicator of these latent constructs.

Results

Descriptive Statistics

Table 2 shows the correlations between the study variables, and Table 1 shows the correlations between each measurement wave. The demographic variables (age, work experience, and tenure) were correlated with job crafting and other study variables. We controlled for these demographics in our analyses.

Hypotheses Testing

To test our hypotheses, we examined two models. We first examined the hypothesized model in which the change in job resources or demands mediated the relationship between job crafting and increased well-being (the fully mediated model). We also examined a partially mediated model that considered the direct effects of job crafting on the well-being variables. This allowed us to examine whether the change in job resources and demands fully or partially mediated the relationship between job crafting and increased well-being (see Weston & Gore, 2006).

In Hypothesis 1, we proposed that employees who crafted more structural job resources also showed an increase in these job resources and that this increase was associated with a higher level of well-being (i.e., work engagement, job satisfaction, and lower levels of burnout). The fully mediated model showed that all hypothesized paths were significant except the paths from age ($\gamma = -.22, p = .22$) and work experience ($\gamma = .23, p = .20$) to increasing structural job resources. These paths were subsequently removed. The fit of the fully mediated model was adequate (see Figure 1). Crafting structural job resources resulted in an increase in structural job resources. This increase, in turn, was positively associated with increased well-being. The partially mediated

Table 1
Correlations Between Measurement Occasions (N = 288)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Crafting struct. JR T2	—																	
2. Crafting soc. JR T2	.51**	—																
3. Crafting chall. JD T2	.67**	.56**	—															
4. Crafting hind. JD T2	.12	.33**	.14*	—														
5. Struct. JR T1	.48*	.27**	.33**	-.12	—													
6. Soc. JR T1	.18*	.12*	.12*	-.13	.68**	—												
7. Workload T1	.09	.10	.12*	.03	.12*	-.02	—											
8. Hind JD T1	.11	.15*	.14*	.05	.10	-.07	.62**	—										
9. Work engagement T1	.49**	.31**	.39**	-.03	.73**	.51**	.23	.16*	—									
10. Job satisfaction T1	.35**	.10	.23**	-.17**	.67**	.57**	.10	.03	.69**	—								
11. Burnout T1	-.35**	-.11	-.22**	.25**	-.70**	-.63**	.09	.13*	-.65**	-.74**	—							
12. Struct. JR T3	.46**	.20**	.30**	-.14*	.82**	.56**	.11*	.07	.62**	.56	-.59**	—						
13. Soc. JR T3	.34*	.22**	.15*	-.09	.60**	.78**	.02	-.02	.48**	.51	-.55**	.71**	—					
14. Workload T3	.15*	.15**	.14*	.08	.14*	.01	.75**	.52**	.22**	.10	.08	.12*	.01	—				
15. Hind JD T3	.05	.12*	.13*	.10	-.01	-.18**	.52**	.66**	.10	-.03	.17**	.04	-.13*	.51**	—			
16. Work engagement T3	.49**	.27**	.39**	-.05	.69**	.44**	.23**	.14*	.85**	.67	-.61**	.72**	.51**	.22**	.12*	—		
17. Job satisfaction T3	.44**	.13*	.23**	-.11	.62**	.50**	.07	.05	.65**	.77**	-.66**	.69**	.60**	.04	.74**	.00	—	
18. Burnout T3	-.38**	-.10	-.24**	.24**	-.68**	-.59**	.07	.11	-.65**	-.72**	.91**	-.64**	-.57**	.09	.16**	-.66**	-.74**	—

Note. JR = job resources; JD = job demands; Struct. = structural; soc. = social; Chall. = hindering.
* $p < .05$. ** $p < .01$.

Table 2
Means, Standard Deviations, and Correlations Among Study Variables (N = 288)

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Age	45.19	8.71	—													
2. Experience	23.68	9.74	.94**	—												
3. Tenure	18.29	9.90	.75**	.76**	—											
4. Crafting struct JR T2	3.20	.73	-.14*	-.11	-.17**	—										
5. Crafting soc JR T2	2.05	.69	-.25**	-.25**	-.32**	.51**	—									
6. Crafting chall JD T2	2.56	.82	-.08	-.06	-.12*	.67**	.56**	—								
7. Crafting hind JD T2	1.77	.63	-.19**	-.16**	-.19**	.12	.33**	.14*	—							
8. ΔStruc JR	0.00	.78	.05	.03	.02	.18**	-.01	.08	-.08	—						
9. Δ Soc JR	0.00	.75	.03	.01	.03	.23**	.14*	.09	-.01	.60**	—					
10. Δ Workload	0.00	1.00	-.00	.05	.01	.13*	.12*	.08	.09	.01	-.07	—				
11. Δ Hind JD	0.00	1.00	.05	.08	.02	.02	.04	.06	.03	.14*	-.01	.17**	—			
12. Δ Work engagement	0.00	1.00	-.02	-.03	-.02	.14*	.01	.12*	-.04	.46**	.32**	.03	.12*	—		
13. Δ Job satisfaction	0.00	1.00	.01	-.01	-.02	.22**	.09	.09	.02	.48**	.39**	-.07	.02	.38**	—	
14. Δ Burnout	0.00	1.00	-.11	-.10	-.09	-.15*	.01	-.11	.02	-.26**	-.22**	.13*	.01	-.27**	-.39**	—

Note. The difference (Δ) measures represent the standardized residuals, regressing T3 scores of job demands, job resources, work engagement, job satisfaction, and burnout on the corresponding T1 scores. JR = job resources; JD = job demands; T1 = Time 1; T2 = Time 2; T3 = Time 3; struct. = structural; soc. = social; chall. = challenging; hind. = hindering.

* $p < .05$. ** $p < .01$.

model revealed that increasing structural job resources was significantly correlated with increased job satisfaction and decreased burnout. This result indicates that the increase in job resources partially mediated these specific relationships. Regarding work engagement, the effect of increasing structural job resources was fully mediated by the increase in these job resources.

The fit indices of the partially mediated model were almost identical to those of the fully mediated model (see Figure 1), and the change in the model fit was not significant at $p < .05$: $\Delta\chi^2 = 7.44$, $\Delta df = 3$, $p = .06$. We therefore inspected the Akaike Information Criterion (AIC), an additional fit index that can be used to choose between competing models (Bozdogan, 1987). A

smaller value indicates a more parsimonious model. The AIC value for the fully mediated model was 237.11, whereas the AIC value for the partially mediated model was 235.67. Taking into account the two significant direct effects from crafting structural job resources to increased job satisfaction and decreased burnout; the lower AIC for the partially mediated model; and the marginally significant chi-square difference test, we accept the partially mediated model. Using bootstrapping, we tested whether the indirect effects were significant. All indirect effects fell within the confidence interval (CI), which did not include zero (work engagement: bootstrap estimate = .11, CI = .02–.22; job satisfaction: bootstrap estimate = .10, CI = .02–.20; burnout: bootstrap estimate =

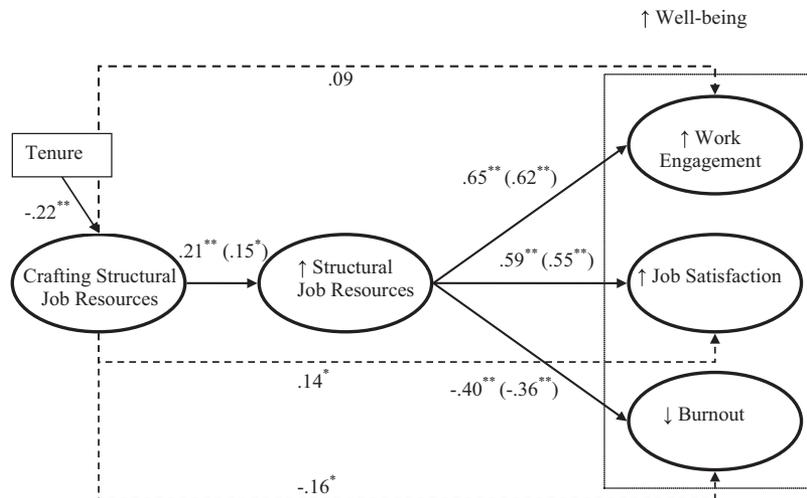


Figure 1. Results of Hypothesis 1: Increases in structural job resources mediate the relationship between crafting structural job resources and well-being (N = 288). Note. Standardized estimates for fully mediated model are listed to the left. Fit of fully mediated model: $\chi^2 = 165.11$, $df = 84$, CFI = .93, SRMR = .06, and RMSEA = .06. Standardized estimates for partially mediated model appear in parentheses. Dashed lines represent paths only estimated in partially mediated model. Fit of partially mediated model: $\chi^2 = 157.67$, $df = 81$, CFI = .94, SRMR = .06, RMSEA = .06. Only significant control variables are shown. * $p < .05$, ** $p < .01$.

-.08, CI = -.18--.02). Therefore, Hypothesis 1 was partially supported.

In Hypothesis 2, we proposed that the increase in social job resources would mediate the relationship between crafting social job resources and increased well-being. The fully mediated model showed that the path between crafting social job resources and increased social job resources was significant. The increase in social job resources was, in turn, significantly related to increased well-being. Tenure was significantly associated with increasing social job resources (see Figure 2). The fit of the hypothesized model was good (see Figure 2). The alternative, partially mediated model showed that the direct effect of increasing social job resources on the well-being variables was not significant, which supported the fully mediated model. The estimates of the indirect effects fell within the CI, which did not include zero (work engagement: bootstrap estimate = .10, CI = .05-.16; job satisfaction: bootstrap estimate = .05, CI = .02-.10; burnout: bootstrap estimate = -.06, CI = -.12--.03). Because the AIC was lower for the hypothesized fully mediated model (fully mediated: 211.20; partially mediated: 215.48) and there were no direct effects of increasing social job resources on increased well-being, Hypothesis 2 appears to be supported.

In Hypothesis 3, we predicted that crafting a greater number of challenging demands would lead to an increase in challenging demands. This increase would, in turn, mediate the relationship between job crafting and increased well-being. The results of the fully mediated model showed that the direct path from increasing challenging job demands to an increase in the challenging demand workload was not significant (see Figure 3). Therefore, the hypothesized model was not supported. However, as shown in Figure 3, employees who experienced heavier workloads also experienced higher levels of burnout. Notably, the partially mediated model showed that increasing challenging job demands was significantly related to increased work engagement and decreased burnout.

Finally, the results did not support Hypothesis 4, in which we predicted that employees who lowered their level of hindering demands would experience a decrease in the corresponding cognitive and emotional demands, which in turn would be associated with decreased burnout and increased work engagement and job satisfaction. None of the paths of the fully and partially mediated models were significant. Hypothesis 4 was therefore not supported (see Figure 4).

Discussion and Conclusion

Although previous studies have shown that changes in job characteristics predict changes in employee well-being, none have focused on the ways employees change their work environment to benefit their own well-being. The central aim of the present study was to examine whether employees changed their job characteristics through job crafting and whether this change was positively related to enhanced well-being. We defined job crafting as the changes that employees initiate to modify their levels of job demands and resources.

Job Crafting Predicts Changes in Job Resources and Well-Being

The present study supported the proposition that employees can influence their job resources (Tims & Bakker, 2010). Employees who reported that they had participated in initiatives to increase their job resources (both structural and social) also reported a higher level of these job resources after 2 months. In other words, employee job crafting appears to be effective because it results in an increase in the level of job resources over time. This result is important in today's constantly changing work environment. For example, not all employees work in resourceful environments, but they may be able to respond proactively to their work situation and actively mobilize their job resources.

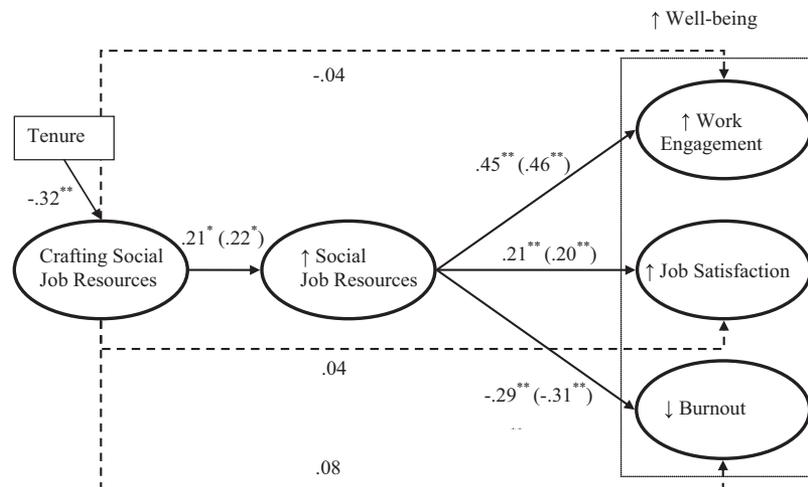


Figure 2. Results of Hypothesis 2: Increases in social job resources mediate the relationship between crafting social job resources and well-being ($N = 288$). Note. Standardized estimates for fully mediated model are listed to the left. Fit of fully mediated model: $\chi^2 = 139.20$, $df = 84$, CFI = .95, SRMR = .05, and RMSEA = .05. Standardized estimates for partially mediated model appear in parentheses. Dashed lines represent paths only estimated in partially mediated model. Fit of partially mediated model: $\chi^2 = 137.48$, $df = 81$, CFI = .95, SRMR = .05, RMSEA = .05. Only significant control variables are shown. * $p < .05$, ** $p < .01$.

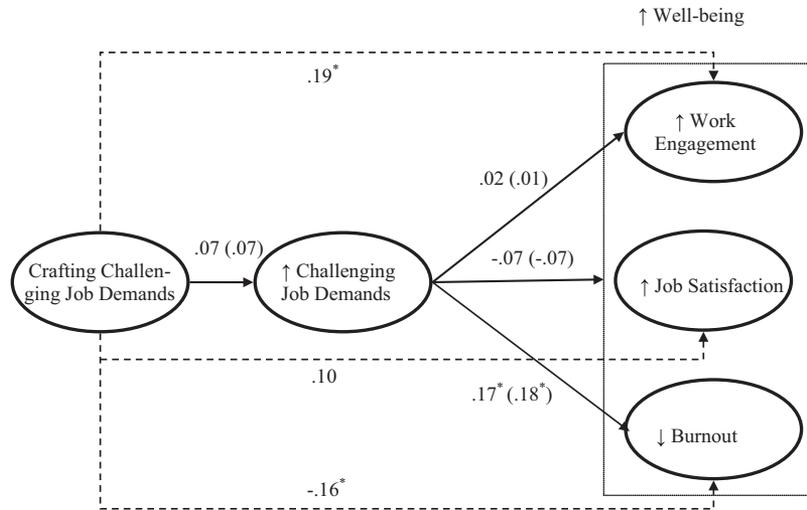


Figure 3. Results of Hypothesis 3: Increases in challenging job demands do not mediate the relationship between crafting challenging job demands and well-being ($N = 288$). Note. Standardized estimates for fully mediated model are listed to the left. Fit of fully mediated model: $\chi^2 = 78.20$, $df = 49$, CFI = .97, SRMR = .07, and RMSEA = .05. Standardized estimates for partially mediated model appear in parentheses. Dashed lines represent paths only estimated in partially mediated model. Fit of partially mediated model: $\chi^2 = 69.79$, $df = 46$, CFI = .97, SRMR = .04, RMSEA = .04. Only significant control variables are shown. * $p < .05$, ** $p < .01$.

The present study also demonstrates that an increase in job resources mediates the relationship between employee job crafting and increased well-being. Whereas previous studies have provided support for this mechanism in the context of top-down interventions (Holman et al., 2010), this study supports such findings in the context of job crafting. Consistent with the motivational process of the JD-R model (Bakker & Demerouti, 2007), this study supports the conclusion that a high level of job resources significantly impacts employee well-being. Because it considers job crafting,

this study is the first to examine how employees take the initiative to align their job resources with their own needs and preferences to experience increased well-being.

Another contribution of this study relates to the study's sample. Previous studies using the job crafting scale (Tims et al., 2012) have been conducted among highly educated knowledge workers. In this study, however, more than half of the sample consisted of employees with lower or intermediate levels of education and employed in a chemical plant. Wrzesniewski and Dutton (2001) also described the job-crafting activities of employees working routine jobs, but this study is the first to empirically show that employees at lower job levels can craft their jobs.

Job Crafting Predicts Changes in Job Demands and Increases Well-Being

We observed no evidence for the effect of crafting challenging or hindering job demands on the level of demands experienced by employees. However, consistent with previous studies (Crawford et al., 2010), we observed a significant relationship between crafting more challenging demands and increased work engagement and decreased burnout. This result suggests that employees who engage in initiatives to create more challenging jobs for themselves influenced their own well-being to some extent. It is possible that simply knowing that one has influenced his or her challenging demands has beneficial effects on well-being. For example, Oldham and Hackman (2010) suggested that such beneficial outcomes might simply derive from being involved in job crafting. Another explanation for the absence of a direct effect of crafting challenging demands on increased challenging demands may be the specific choice of demand. Based on earlier studies (Crawford et al., 2010; Podsakoff et al., 2007), we expected that workload could be classified as a challenging demand because it

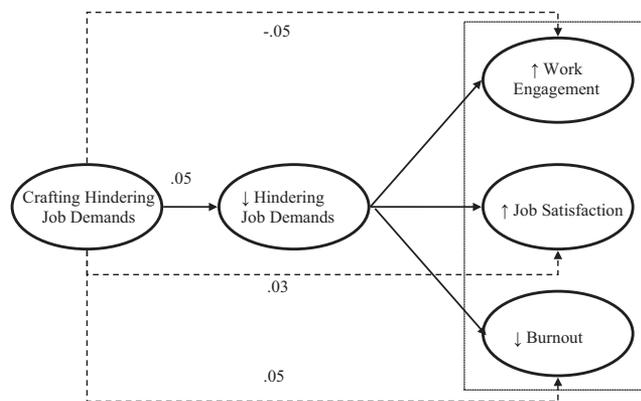


Figure 4. Results of Hypothesis 4: Increases in hindering job demands do not mediate the relationship between crafting hindering job demands and well-being ($N = 288$). Note. Standardized estimates for fully mediated model are listed to the left. Fit of fully mediated model: $\chi^2 = 146.24$, $df = 85$, CFI = .94, SRMR = .05, and RMSEA = .05. Standardized estimates for partially mediated model appear in parentheses. Dashed lines represent paths only estimated in partially mediated model. Fit of partially mediated model: $\chi^2 = 143.98$, $df = 82$, CFI = .94, SRMR = .05, RMSEA = .05. Only significant control variables are shown. * $p < .05$, ** $p < .01$.

was related to work engagement. In the work environment studied here, many of the processes were automated and were therefore able to maintain the workload at a stable level over the 2 months. Future research could study more and different challenging demands, such as high responsibility and job complexity (Crawford et al., 2010), to determine whether they can explain the positive effect of crafting more challenging demands on increased well-being.

Though the crafting of challenging demands was related to increases in well-being, crafting hindering demands showed no relationship to decreases in hindering job demands or increases in employee well-being. We offer several explanations for this result. First, employees may not have felt the need to decrease their job demands. The mean score on this job-crafting dimension was 1.77, which refers to the *seldom* response category. When employees do not decrease their hindering job demands, we cannot expect to observe a change in these demands over time. Second, employees may have felt reluctant to report that they had attempted to decrease their job demands; they may have felt that decreasing one's job demands was socially undesirable.

Finally, the results may suggest that reducing hindering job demands may be difficult. Cooley and Yovanoff (1996) have suggested that work characteristics can be classified as *givens* and *alterables*. To change givens, large-scale interventions may be necessary. By contrast, alterables are characteristics that are easily changed in the short-term. Hakanen, Bakker, and Schaufeli (2006) concluded that job demands are more likely to be givens, but job resources are more likely to be alterables. Our results suggest the same conclusion: employees were able to alter their job resources but did not change their level of job demands. An interesting avenue for future research would be to examine why changing job demands occurs less frequently than changing job resources.

Practical Implications

One implication of the study results is that employee job crafting should receive more attention at work because of its positive effect on well-being. Because job crafting occurs within organizations, managers should be aware of the effect that employees can have on their own work environment. It is the manager's task to manage job-crafting behaviors so that they contribute to personal and organizational goals. In addition, managers could inform their employees about job crafting strategies and stimulate employees to take initiative when they desire more challenging work or less hindering job demands. In other words, managers could provide employees with opportunities to craft their jobs (Wrzesniewski & Dutton, 2001). For example, higher levels of autonomy may make it easier for individuals to change their job demands and resources (Leana, Appelbaum, & Shevchuk, 2009; Petrou, Demerouti, Peeters, Schaufeli, & Hetland, 2012). As was noted earlier, this reasoning does not imply that employees in low-autonomy jobs may not be able to craft their jobs; even those employees may discover job-crafting strategies (Wrzesniewski & Dutton, 2001).

In addition, our results do not suggest that employees should be held responsible for their work environment and well-being. Rather, they suggest that management interventions should focus more on the effects of job demands on employee well-being because employees seem to change their job demands less often than their job resources. Therefore, the interplay between mana-

gerial and employee interventions should be examined to create the most optimal work environment for employees.

Study Limitations

The present study also has limitations. First, this study cannot infer causality. Although the three-wave study design allowed us to measure the level of job demands, job resources, and well-being before and after we measured the mediator job crafting, other circumstances were not controlled for and may have influenced our results. For example, although we were informed that the managers made no formal job changes, we were not able to control for informal interventions that may have influenced job demands and resources during the study period. In addition, it should be noted that all participants received standardized feedback regarding their job demands and resources, which may have cued job-crafting behaviors. The effect of this cueing could not be examined because there was no control group. However, the goal of this study was to examine how differences in job-crafting behaviors between employees were related to the other model variables, not whether the feedback triggered job crafting. Quasiexperimental designs that compare experimental groups against control groups would be necessary to make more confident causal attributions (Shadish, Cook, & Campbell, 2002).

Finally, the measures were all self-reports, which raises the possibility of common method bias. However, the repeated measurements over time may have diminished the possibility for common method bias in this study (Doty & Glick, 1998). Moreover, the evaluation of the job and employee well-being may be subjective, and self-reports may be the best method to capture these perceptions and feelings (Sousa-Poza & Sousa-Poza, 2000).

Conclusion

The present study has extended our understanding of the effect of employee job crafting on job design and well-being. Employees who stated that they engaged in job crafting effectively increased their job resources over time, which was positively associated with increased well-being. These results obviously suggest that employees can optimize their own well-being when allowed to. Therefore, organizations should not only facilitate employee well-being by providing sufficient job resources and an optimal level of job demands, but they should also offer opportunities for employee job crafting.

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