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Job crafting and job performance: A longitudinal study

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In this three-wave study ($N = 288$), we examined whether job crafting intentions and work engagement led to actual job crafting behaviours and, in turn, to higher levels of prospective work engagement and job performance. We used the Job Demands-Resources model as a theoretical framework and defined job crafting as the self-initiated changes that employees make in their job demands and resources. One month after reporting their job crafting intentions, respondents rated their actual job crafting behaviours. Again one month later, they rated their levels of work engagement, in-role performance, and organizational citizenship behaviour towards individuals (OCBI). Results of structural equation modelling showed that job crafting intentions and work engagement significantly related to actual job crafting, which, in turn, related to higher levels of work engagement, while controlling for job characteristics. Results further showed that engaged employees performed better on their in-role tasks but did not perform more OCBI. The findings suggest that employees can increase their own work engagement and job performance through job crafting.

Keywords: Employee engagement; Intentions; Job crafting; Job performance; Organizational citizenship behaviours; Work engagement.

Organizations benefit from employees who are engaged in their work. Compared to less engaged employees, engaged employees report the highest levels of job performance (Bakker & Bal, 2010; Christian, Garza, & Slaughter, 2011) and also receive the highest performance ratings from their supervisors and clients (Bakker, Demerouti, & Ten Brummelhuis, 2012; Halbesleben & Wheeler, 2008; Salanova, Agut, & Peiró, 2005). In addition, engaged workers deliver more than what is prescribed by their formal tasks (extra-role behaviours; Bakker, Demerouti, & Verbeke, 2004; Christian et al., 2011). These positive outcomes of work engagement for both the organization and the individual make it meaningful to understand how work engagement can be advanced. Studies have shown that employees working in a resourceful job are most likely to be engaged with their work (for meta-analyses, see Crawford, LePine, & Rich, 2010; Halbesleben, 2010). For example, employees with decision latitude in how and when to work, who can use various skills, and can count on colleagues and others are most likely to experience this positive fulfilling state of mind that is characterized by vigour (i.e., feeling fit and energetic while working), dedication (i.e., feeling enthusiastic about the work and involved in the job tasks), and absorption (i.e.,

finding the job so involving that one forgets the time while working; Schaufeli, Salanova, González-Roma, & Bakker, 2002).

Although employers should strive to create jobs with motivating potential (Hackman & Oldham, 1976), employees also need to take responsibility for their own work-related well-being. Wrzesniewski and Dutton (2001) have argued that employees can and do shape the boundaries of their jobs and create a work environment that fits their preferences, skills, and competences. This process of proactively influencing one's job is called job crafting. Employee involvement in the process of creating a good work environment may be crucial for at least two reasons. The first reason is that all employees have idiosyncratic characteristics that may result in different preferences for job characteristics or career choices (Berings, De Fruyt, & Bouwen, 2004). For example, an individual who works best under deadlines will benefit more from high time pressure than a person who plans his/her tasks carefully ahead of time. Individuals have this knowledge readily accessible, whereas a manager may not have the time or resources to find out the preferences of every employee. A second reason for the importance of an individual's involvement in the design of a job is that once employees know how they can

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create their optimal work environment, they can monitor their job characteristics and intervene when necessary to prevent negative outcomes like demotivation and deteriorated performance.

Whereas job design scholars such as Kulik, Oldham, and Hackman (1987) already suggested that employees may redesign their jobs on their own initiative, job crafting only recently gained attention of work and organizational scholars (Ghitulescu, 2006; Wrzesniewski & Dutton, 2001). Job crafting may be an interesting strategy used by employees to stay or become engaged in their work and as a consequence to remain valuable for the organization. To further knowledge about job crafting, the aim of the present study is to longitudinally examine predictors of job crafting (i.e., job crafting intentions and work engagement) as well as the relationship of job crafting with prospective work engagement and job performance. We are aware of only a few studies that empirically examined the relationship between job crafting, work engagement, and/or job performance (e.g., Bakker, Tims, & Derks, 2012; Leana, Appelbaum, & Shevchuk, 2009; Tims, Bakker, Derks, & Van Rhenen, 2013) and these were all cross-sectional studies. For example, job crafting and work engagement are related to each other (Tims, Bakker, & Derks, 2012), but the causal order has not been established yet. Some authors argue that job crafting may lead to work engagement (e.g., Petrou, Demerouti, Peeters, Schaufeli, & Hetland, 2012), whereas others argue that engaged workers may be more likely to show initiative and be proactive (e.g., Hakanen, Perhoniemi, & Toppinen-Tanner, 2008). Furthermore, Bakker (2011) and Bakker and Demerouti (2014) suggest that job crafting and work engagement are reciprocally related. Moreover, most studies only focused on in-role performance whereas extra-role performance or organizational citizenship behaviour (OCB) is also an important aspect of employee performance that relates to helping colleagues and orienting new employees (Williams & Anderson, 1991).

JOB CRAFTING

According to Wrzesniewski and Dutton (2001), job crafting can take three different forms: (1) employees can increase or decrease the number of tasks they need to perform or change how they perform their tasks (i.e., crafting the task boundaries); (2) employees can change the number and intensity of interactions with others both on the job and outside of the organization (i.e., crafting the relational boundaries); and (3) employees can change the meaning of their job by reformulating the impact their work has on themselves or others (i.e., crafting the cognitions about the job). The present research takes a more general approach to job crafting, which focuses on crafting the job characteristics instead of crafting the job content. More specifically, job crafting is conceptualized using the Job Demands-Resources (JD-

R) theory (Bakker & Demerouti, 2007; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). The advantage of using the JD-R model to operationalize job crafting is that it allows us to study job crafting at a more general level. This general approach is important as job crafting behaviours may take many different forms (e.g., Wrzesniewski, 2003), making it difficult to study job crafting at the content level. Using JD-R theory that focuses on two general classes of job characteristics that will be present in each job and organization (Bakker & Demerouti, 2007) will improve the knowledge about and understanding of job crafting.

The first class of job characteristics distinguished in JD-R theory is labelled “job demands” and refers to those aspects of the job that require sustained physical and/or psychological effort or skills (Demerouti et al., 2001). Therefore, job demands are associated with certain physiological or psychological costs. Examples of job demands are a heavy workload and emotionally demanding interactions with customers. Building on inconsistent findings regarding relationships between job demands and work outcomes, Cavanaugh, Boswell, Roehling, and Boudreau (2000) showed that some job demands (e.g., role ambiguity, insecurity) were indeed related to negative work outcomes, such as turnover but that other job demands (e.g., time pressure, number of projects/assignments) were related to positive work outcomes, such as job satisfaction. Thus, depending on the demand that was studied, there was a positive or negative relationship between job demands and work outcomes. Job demands that require increased effort of the employee and may lead to job satisfaction are called challenging job demands (LePine, Podsakoff, & LePine, 2005), whereas job demands that require increased effort and are related to negative work outcomes are called hindering job demands. These job demands hinder the employee in achieving valued goals (Cavanaugh et al., 2000).

The second class of job characteristics is called “job resources” (Demerouti et al., 2001). Job resources refer to those aspects of the job that are either/or functional in achieving work goals, reducing job demands and the associated physiological and psychological costs, and stimulating personal growth, learning, and development (Bakker & Demerouti, 2007). Examples of job resources are autonomy, performance feedback, skill variety, and social support. High levels of job resources available at work lead to work engagement (Bakker & Demerouti, 2007; Schaufeli & Bakker, 2004).

Within this theoretical framework, job crafting can be described as the changes employees make in their job demands and job resources (cf. Tims & Bakker, 2010; Tims et al., 2012). More specifically, based on a large sample ($N = 1,118$), Tims and her colleagues validated four job crafting dimensions, namely (1) increasing structural job resources (i.e., crafting more autonomy, variety, opportunities for development), (2) increasing

social job resources (i.e., crafting more social support, feedback, coaching), (3) increasing challenging job demands (i.e., crafting involvement in new projects), and (4) decreasing hindering job demands (i.e., crafting fewer emotional and cognitive demands). Research showed that employees naturally engage in all four types of job crafting (Tims et al., 2012), indicating that it is relevant to study these types of job crafting in more detail. But when are employees most likely to engage in job crafting?

PREDICTORS OF JOB CRAFTING

Job crafting intentions

It is often argued that the most immediate and important predictor of behaviour is the intention to perform that behaviour (Ajzen, 1991; Sheeran, 2002). Intentions are described as self-instructions to perform a specific behaviour or to obtain specified outcomes (Triandis, 1980). People who hold strong intentions towards specific behaviours are more likely to perform those behaviours because intentions comprise the motivational factors that influence a behaviour (e.g., effort, planning, 2012; Ajzen, 1991). The strongest link between intention and behaviour will be found when the behaviour is volitional, and opportunities and resources to perform the behaviour are available (Webb & Sheeran, 2006). As job crafting is proactive and discretionary behaviour that employees spontaneously engage in, it is reasonable to expect that employees with job crafting intentions will also convert these intentions into actions. More specifically, proactive behaviour reflects self-initiation of change, anticipatory action, and taking control over one's work environment (Parker & Collins, 2010). These characteristics indicate that especially these employees who have the intention to craft their job demands and/or job resources are likely to take action because job crafting refers to autonomous, self-controlled behaviour.

In the proactivity literature, the intention to make changes at work may reside in the "reason to" motivational state (Parker, Bindl, & Strauss, 2010). The "reason to" motivation reflects that people must see value in being proactive and changing job characteristics. For example, Parker and colleagues state that individuals may be more likely to strive for proactive goals when they want to increase their challenges at work as challenges may fulfil the needs for competence and autonomy (Deci & Ryan, 2000). Wrzesniewski and Dutton (2001) also refer to job crafting as a means to take back control over work. When employees have the intention to change specific job characteristics, we expect they are more likely to actually change them because they believe it will make their experience of the job better and they perceive to have control over their job.

Intentions to engage in job crafting were assessed in the first survey, and based on the proactive nature of job crafting, we expect that job crafting intentions predict actual job crafting behaviour in the next month.

Hypothesis 1a: Job crafting intentions predict actual job crafting (all four dimensions).

Work engagement

Next to behavioural intentions to engage in job crafting, motivational aspects may also play an important role in predicting job crafting. Based on the job design literature, it is known that the work environment influences how employees feel and behave at work (Hackman & Oldham, 1976). As job crafting is about proactively changing the job characteristics, it has been argued that this may lead employees to feel better at their work. Namely, when employees successfully create a work environment characterized by job resources and challenging job demands, their work engagement and job satisfaction may increase (Tims, Bakker, & Derks, 2013). At the same time, it is likely that employees who feel motivated and enthusiastic will be more likely to be proactive. JD-R theory suggests that job resources and job challenges are related to work engagement and that engaged employees mobilize their own job resources and job challenges which may, in turn, foster engagement over time (Bakker, 2011). As such, a positive gain spiral may emerge over time (Bakker, 2011). Research has shown that positive emotions that accompany work engagement (i.e., joy and enthusiasm) may make employees more open to their environment (Fredrickson, 2000) and more likely to take initiative at work (Salanova & Schaufeli, 2008; Sonnentag, 2003). Engaged workers who care about their work, have resources to spend, and are concentrated on their work likely see value in proactively improving their job characteristics (Sonnentag, 2003). Interestingly, Warr and Inceoglu (2012) argued that engaged employees are constantly on the lookout for more job characteristics because their greater motivation means that they want more from their job, for example, in terms of opportunities for personal influence (i.e., autonomy) and challenging workload. Crafting the job may thus be a means to realize their needs.

Hakanen, Perhoniemi, et al. (2008) found that work engagement and personal initiative were positively and reciprocally related with each other over time, supporting a gain spiral. Recently, Lu, Wang, Lu, Du, and Bakker (2014) found that engaged employees crafted their physical and relational boundaries more often than their less engaged counterparts in a period of three months. The present study therefore incorporates a relationship between work engagement assessed at the first measurement occasion and T2 job crafting. However, we do not

expect that T1 work engagement predicts T2 crafting of hindering job demands because engaged workers are more likely to see hindering demands as job challenges or to have sufficient levels of job resources available to deal with these demands. In support of this reasoning, Petrou et al. (2012) found that on days in which employees experienced high work pressure and high job autonomy (“active jobs; Karasek, 1979), they were least likely to decrease their hindering job demands. Furthermore, as research has shown that employees with active jobs are more likely to be engaged (Bakker, Hakanen, Demerouti, & Xanthopoulou, 2007), they will be least likely to decrease their hindering job demands.

Hypothesis 1b: T1 work engagement predicts T2 crafting of job resources and challenging job demands.

THE RELATIONSHIP BETWEEN JOB CRAFTING, WORK ENGAGEMENT, AND JOB PERFORMANCE

Employees who craft their jobs and create a work environment with sufficient job resources and challenging job demands but without hindering job demands are expected to feel engaged with their job tasks (Tims & Bakker, 2010). This expectation is based on the idea that job resources are instrumental in achieving work goals (Bakker & Demerouti, 2007) and enable employees to learn new things, to personally grow, and to develop themselves (Bakker, Demerouti, & Sanz-Vergel, 2014). In this way, job resources are related to autonomous forms of motivation, such as intrinsic motivation and identified motivation (Deci & Ryan, 2000). Baard, Deci, and Ryan (2004) demonstrated that aspects of the environment that satisfy peoples’ need for autonomy, relatedness, and competence, such as decisional control, social support, and developmental opportunities, likely yield positive outcomes, such as motivation. Similarly, Deci et al. (2001) showed that satisfaction of the psychological needs of autonomy, competence, and relatedness was positively related to work engagement.

Preliminary support for the relationship between job crafting, in which employees themselves change their job characteristics, and work engagement comes from the study of Tims and colleagues (2012). These authors found that employees who reported that they crafted their job resources and challenging job demands were rated by their colleagues as more engaged than employees who did not craft their job resources and challenging job demands. Bakker, Tims, et al. (2012) also found a positive relationship between job crafting and work engagement. More specifically, their results showed that employees who proactively increased their structural and social job resources, and their

challenging job demands, reported higher levels of work engagement than employees who did not craft these job characteristics. In addition, a quantitative diary study showed that employees who crafted their challenging job demands during the day were more likely to feel vigorous, dedicated, and absorbed on that day (Petrou et al., 2012). These findings indicate that employees who are able to mobilize their own job resources and challenging job demands are more likely to experience their work as a psychologically fulfilling activity.

In contrast to the positive relationships reported between increasing job resources and increasing challenging job demands and work engagement, research has shown that the job crafting dimension of decreasing hindering job demands showed another pattern of relationships with work engagement. Namely, Petrou et al. (2012) found that reducing hindering job demands related negatively to work engagement at the day level. Similarly, Tims, Bakker, Derks, and Van Rhenen (2013) reported a negative relationship between decreasing hindering job demands and vigour, which reflects the energy aspect of work engagement. In other words, the expected positive relationship of this type of job crafting with motivational outcomes is not present. In contrast, it seems more likely that decreasing hindering job demands is negatively related to work engagement. The meta-analyses of Crawford et al. (2010) and Nahrgang, Morgeson, and Hofmann (2011) showed that hindering job demands may be more likely to affect work engagement negatively. However, as job crafting is about changing job demands, this relationship needs further exploration in order to understand the process that underlies this negative relationship. Based on the JD-R model (Demerouti et al., 2001), in which job demands are stronger related to energy depletion and negative health outcomes such as burnout than to positive outcomes (Hakanen, Schaufeli, et al., 2008), it may be more likely that decreasing hindering job demands is related to a decrease in exhaustion or stress because people crafted a work environment without obstacles such that it may free up energy. Taking these findings into account, we formulate the following hypothesis:

Hypothesis 2a: Increasing structural and social job resources and increasing challenging job demands at T2 is positively related to work engagement at T3. More specifically, increasing structural and social job resources and increasing challenging job demands at T2 mediate the relationship between T1 job crafting intentions and T3 work engagement.

Hypothesis 2b: Decreasing hindering job demands at T2 is negatively related to work engagement at T3. More specifically, decreasing hindering job demands at T2 mediates the relationship between T1 job crafting intentions and T3 work engagement.

The relationship between job crafting and job performance has been examined in several studies. From qualitative interview studies (Berg et al., 2010; Lyons, 2008) as well as quantitative survey studies (Bakker, Tims, et al., 2012; Leana et al., 2009; Tims et al., 2012), it appears that job crafting mainly has a positive relationship with job performance. For example, Leana et al. found that teachers who crafted their work received higher observer ratings of quality of care. Moreover, Berg, Dutton, and Wrzesniewski (2008) summarized four lines of literature about job crafting and concluded that job crafting leads to positive experiences such as achievement, enjoyment, and meaning; to resilience, as exemplified by increased competence, personal growth, and ability to cope with future adversity; and to a changed work meaning and work identity. Job crafting may relate positively to job performance because employees make changes to their jobs to enable better performance or be more efficient but also to be able to do tasks they find interesting or rewarding. Job crafters may thus direct their energy to change job characteristics to achieve goals they value or goals they believe to lead to rewarding outcomes (Warr & Inceoglu, 2012).

Based on the arguments that crafting one's job demands and job resources may lead to work engagement and job performance, we expect that work engagement may mediate the relationship between job crafting and job performance. Namely, work engagement seems to influence job performance too. The relationship between work engagement and job performance has been theorized to exist because engaged individuals approach their tasks with a sense of self-investment (i.e., dedication) and energy which should lead to higher levels of in-role and extra-role performance (Christian et al., 2011; Rich, LePine, & Crawford, 2010). In-role performance likely improves because employees are invested in their tasks and will persist to perform their tasks effectively. In addition, based on social exchange theory, it is expected that employees with resources are willing to invest these resources in performing their tasks (Saks, 2006). Extra-role performance or OCB will occur more often among engaged employees because they are concerned about facilitating the organization and the people within the organization (Rich et al., 2010). Regarding OCB, this study focused on OCB behaviours that benefit individuals and thus indirectly contribute to the organization, such as helping others who have been absent. This type of OCB is referred to as OCB at the individual level (i.e., OCBI), whereas behaviours that benefit the organization in general (e.g., giving advance notice when unable to come to work) are referred to as OCB at the organizational level (OCBO; Williams & Anderson, 1991). Furthermore, OCB towards individuals (OCBI) has been labelled "altruism", whereas OCBO has been labelled "generalized compliance" (cf. Organ &

Konovsky, 1989). In line with our focus on volitional behaviours (and not compliance behaviours), we included OCBI in this study.

Indeed, Bakker, Tims, et al. (2012) reported that job crafting facilitates work engagement and indirectly in-role performance. However, these authors only focused on increasing job resources (both structural and social job resources) and challenging job demands. In a study that incorporated all four job crafting dimensions, the same three job crafting dimensions related positively to job performance via work engagement (Tims, Bakker, Derks, & Van Rhenen, 2013). However, it was again found that decreasing hindering job demands showed a negative relationship with job performance via work engagement. In other words, employees who decreased their hindering job demands reported significantly lower levels of work engagement and job performance compared to employees who did not decrease their hindering job demands. We predict that:

Hypothesis 3: Work engagement (T3) mediates the relationship between job crafting (T2) and in-role performance and OCBI (T3).

METHOD

Participants and procedure

This study addresses a unique topic by making limited use of data that have been reported in Tims, Bakker, and Derks (2013). Nevertheless, the focus of the two papers is different. Tims et al. investigated whether job crafting is related to a change in the job demands and job resources and whether the change in these job characteristics mediated the relationship between job crafting and a change in well-being. In contrast, the current article adds to the literature by focusing on the predictive value of job crafting intentions and work engagement on job crafting behaviour and of job crafting behaviour on job performance over time. Thus, the first study explains the mechanism through which job crafting may influence employee well-being (i.e., via a change in job characteristics), whereas the present study focuses on how job crafting intentions relate to job crafting, how work engagement and job crafting strengthen each other over time, and we include job performance as an outcome measure.

Participants were recruited at a chemical plant in The Netherlands, which produces plastics for several industries, such as the automotive, health care, and electronics industry (see also Tims, Bakker, & Derks, 2013). The organization was interested in the job crafting and work engagement of their employees. Therefore, all employees ($N \approx 1,250$) were invited to participate in the study via a message that was posted on their intranet and via information posters throughout the

organization. Every employee received an e-mail that described the aims of the study, emphasized confidentiality, and contained a personal login code. The e-mail also provided the link to the survey. The study had a three-wave design, with one month in between the waves. Because job crafting is found to occur on a daily basis (Petrou et al., 2012), we expect that employees should have had at least some opportunities to craft their jobs during the time period of one month. In addition, intentions correlate more closely with behaviour when the time interval between measurement of the intention and behaviour is shorter (Davidson & Jaccard, 1979).

At Time 1, the survey was completed by 564 (45.1%) employees. At Time 2, the number of participants was 468 (37.4%), and at Time 3, the survey was completed by 477 (38.1%) employees. Due to study drop-out, not all participants could be matched to earlier measurement occasions, which resulted in a final sample of 288 participants who completed the survey at all three occasions (response rate 23%). In line with the general distribution of gender within the organization, participants were mainly male (82.6%), with a mean age of 45.19 years ($SD = 8.71$), and a mean tenure of 18.31 years ($SD = 9.95$). On average, participants worked 39.15 hr a week ($SD = 6.81$). Employees had primary/secondary education (15%), vocational education (40%), or higher professional/scientific education (45%). Comparisons of those who dropped out and those who completed all three surveys revealed no significant differences on the demographic variables reported earlier and on the study variables. We therefore concluded that the dropouts were comparable with the sample group and that no selective dropout had occurred.

Time 1 measure

Job crafting intentions were measured with a recently validated job crafting scale (Tims et al., 2012) that was adapted such that the items referred to the intention to engage in job crafting. The item stem was “For the upcoming period, I intend to ...” and then the item was presented. An example item that reflects “Intention to increase structural job resources” (five items, $\alpha = .81$) is “... make sure to use my capacities to the fullest”. An example item for “Intention to increase social job resources” (five items, $\alpha = .83$) is “...ask colleagues for advice”. “Intention to increase challenging job demands” was measured with items such as “... start new projects when there is not much to do at work” (five items, $\alpha = .80$). Finally, “Intention to decrease hindering job demands” (six items, $\alpha = .87$) was measured with items such as “...ensure that my work is emotionally less intense”. Employees indicated to what extent they agreed with each statement with a response scale ranging from 1 (*totally disagree*) to 5 (*totally agree*).

Time 2 measure

Actual job crafting was measured with an adapted version of the 21-item scale described earlier (Tims et al., 2012). We adapted the items such that they referred to job crafting in the preceding month. The item stem was “Last month, ...” and then the item was presented. For example, the dimension increasing structural job resources was assessed with items such as “Last month, I tried to learn new things at work” ($\alpha = .78$). Cronbach’s alphas for the dimensions increasing social job resources, increasing challenging job demands, and decreasing hindering job demands, were .82, .81, and .81, respectively. Responses were given on a 5-point frequency scale that ranged from 1 (*never*) to 5 (*very often*).

Time 3 measure

Work engagement was measured with the 9-item version of the Utrecht Work Engagement Scale (UWES; Schaufeli, Bakker, & Salanova, 2006). The UWES items reflect three underlying dimensions, measured with three items each: vigour ($\alpha = .93$; e.g., “At my work, I feel bursting with energy”), dedication ($\alpha = .95$; e.g., “I am enthusiastic about my job”), and absorption ($\alpha = .85$; e.g., “I get carried away when I am working”). A 7-point scale was used with response categories ranging from 0 (*never*) to 6 (*always*).

In-role performance and OCBI were each measured with seven items developed by Williams and Anderson (1991). The scale was translated to Dutch and back-translated to English to check the validity of the translation. An example item that measures in-role performance is “I adequately complete assigned duties” and of OCBI is “I help others who have been absent”. A 5-point scale was used with response categories ranging from 1 (*totally disagree*) to 5 (*totally agree*). Cronbach’s α of the in-role performance measure was .86 and of the OCBI measure it was .84. Since the scale was translated from English to Dutch, we examined the factor structure using confirmatory factor analysis. After correlating the error terms of two in-role performance items that were reverse-scored (Floyd & Widaman, 1995), the fit of the two-factor model, in which in-role performance and OCBI were distinguished, was adequate ($\chi^2 = 203.35$, $df = 75$, comparative fit index (CFI) = .93, Tucker–Lewis index (TLI) = .91, root mean square error of approximation (RMSEA) = .08) and better than a one-factor model, in which the items for in-role performance and OCBI loaded on one factor ($\Delta\chi^2 = 338.89$, $\Delta df = 1$, $p < .01$).

Control variables

In the analyses, we control for T1 work engagement, in-role performance, and OCBI. These variables were assessed with the scales described earlier. The reliability

of the subscales measuring work engagement was .92, .95, and .83 for vigour, dedication, and absorption, respectively, at T1. Cronbach's α of in-role performance at T1 was .88 and of OCBI it was .83.

In addition, we control for the effect of T1 job resources and job demands on T3 work engagement as they are important predictors of work engagement (Halbesleben, 2010). The following job resources measured at T1 were included: autonomy (three items, $\alpha = .84$; Bakker, Demerouti, Taris, Schaufeli, & Schreurs, 2003), social support (three items, $\alpha = .79$; Bakker et al., 2003), supervisory coaching (five items, $\alpha = .92$; Le Blanc, 1994), and feedback (three items, $\alpha = .85$; Bakker et al., 2003). With regard to job demands, the following demands measured at T1 were included: emotional demands (three items, $\alpha = .63$; Van Veldhoven & Meijman, 1994), cognitive demands (four items, $\alpha = .84$; Van Veldhoven & Meijman, 1994), and workload (three items, $\alpha = .94$; Furda, 1995).

Analysis strategy

The hypothesized model was examined using structural equation modelling in AMOS (Arbuckle, 2005). We modelled the variables as latent variables with the scale means or parcels as the indicators given the relatively small sample size compared to the number of items (Marsh, Hau, Balla, & Grayson, 1998). For example, for work engagement, we used the mean scale scores (i.e., vigour, dedication, absorption) as the indicators of the latent construct, and for the latent constructs job performance and OCBI, parcels were created. A parcel can be defined as an aggregate-level indicator comprising the average of two or more items. The psychometric advantage of parcelling is that parcels result in more reliable measurement models (Little, Cunningham, Shahar, & Widaman, 2002). Parcels were created based on random assignment of items to one of the two parcels (see Little et al., 2002). In addition, the reliability of the parcels was checked and all reliability estimates were greater than .71.

Based on previous research, job crafting was modelled with two latent factors. The first latent factor comprised the mean scores on the dimensions Intention to increase structural job resources, Intention to increase social job resources, and Intention to increase challenging job demands. The second latent factor contained two parcels of Intention to decrease hindering job demands that were formed on the basis of similarity (Little et al., 2002). With regard to actual job crafting, the same procedure was followed.

Model fit was assessed with the chi-square statistic (χ^2), the RMSEA, the standardized root mean square residual (SRMR), the CFI, and the TLI. The conventional cut-off values of these fit indices were used to assess model fit (i.e., CFI, TLI, IFI > .90, RMSEA < .08 to indicate good fit; Marsh, Hau, & Wen, 2004). In

addition to model fit, we used bootstrapping to test the significance of the hypothesized indirect effects. The bootstrap procedure estimates more accurate confidence intervals of indirect effects because it resamples from the data set and estimates the indirect effect in every new sample. Also, it does not impose the assumption of normality upon the sampling distribution (Preacher & Hayes, 2008), which is important because the sampling distribution of the indirect effect is skewed relative to a normal distribution.

RESULTS

Descriptive statistics

The correlations among the study variables are displayed in Table 1. Before testing the hypothesized model, we examined the longitudinal invariance of our measures across measurement times (Horn & McArdle, 1992) such that solid conclusions can be drawn based on our longitudinal data.

Longitudinal invariance

Three scales were used at T1 and T3, namely work engagement, in-role performance, and OCBI. The invariance test requires analysing data by fitting the two waves of data with two separate models simultaneously. Therefore, two separate factor models were constructed for each of the T1 and T3 factors, resulting in six latent variables. In addition, correlations were estimated among all possible pairs of uniqueness between T1 and T3 because the same items were used across two time points (Pitts, West, & Tein, 1996). The invariance routine involves testing and comparing models that impose successive restrictions on model parameters. A significant chi-square difference between models indicates that the equality constraints are not consistent with the data (hence not invariant across time). Model A freely estimated all the parameters across the two measurement times, which is the unrestricted model. Next, factor loadings were constrained to be equal across measurement times in Model B. In Model C, factor loadings and factor variances are constrained to be equal in both measurement times, and in Model D, factor loadings, factor variances, and factor uniqueness were constrained to be equal across the two measurement times.

As indicated in Table 2, the results largely support longitudinal metric invariance of our measures. The first three models do not differ significantly from each other, indicating that the factor loadings and factor variances are invariant across the two measurement times. Model D, however, shows that the factor uniquenesses are not invariant, as this model showed a significant chi-square change from the previous model. However, this is a very stringent test (Byrne, 2004), and invariance of the factor loadings is usually the only form of invariance tested in

TABLE 1
Correlations between study variables (N = 288)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1 Int. to incr. Struc JR T1	—																				
2 Int. to incr. Soc JR T1	.69**	—																			
3 Int. to incr. Chall JD T1	.74**	.62**	—																		
4 Int. to decr. Hind JD T1	.30**	.42**	.21**	—																	
5 Work engagement T1	.32**	.25**	.34**	-.04	—																
6 Autonomy T1	.28**	.27**	.31**	.16**	.56**	—															
7 Social support T1	.20**	.12*	.29**	-.07	.36**	.42**	—														
8 Coaching T1	.21**	.29**	.32**	-.09	.43**	.47**	.57**	—													
9 Feedback T1	.24**	.17**	.33**	.12*	.51**	.50**	.50**	.64**	—												
10 Emotional demands T1	.00	.09	-.04	.02	-.01	-.03	-.24**	-.16**	-.10	—											
11 Cognitive demands T1	.11	.12*	.10	.07	.31**	.22**	.02	.12*	.14*	.31**	—										
12 Workload T1	.00	.07	-.06	.05	.23**	.09	-.09	-.01	.03	.44**	.58**	—									
13 In-role performance T1	.11	.03	.19**	-.11	.31**	.28**	.30**	.24**	.29**	-.09	.25**	.05	—								
14 OCBI T1	.29**	.19**	.35**	-.01	.25**	.24**	.34**	.29**	.29**	-.04	.12*	.06	.45**	—							
15 Incr. Struc JR T2	.45**	.30**	.41**	.04	.49**	.43**	.23**	.20**	.26**	.04	.16**	.09	.33**	.26**	—						
16 Incr. Soc JR T2	.41**	.49**	.38**	.19**	.31**	.23**	.11	.21**	.14*	.15**	.08	.10	.07	.15**	.51**	—					
17 Incr. Chall JD T2	.33**	.21**	.37**	-.01	.39**	.30**	.10	.08	.13*	.10	.13**	.12*	.24**	.27**	.67**	.56**	—				
18 Decr. Hind JD T2	.09	.20**	.02	.40**	-.03	-.15*	-.09	-.07	-.16**	.13*	-.07	.03	-.15**	-.06	.12	.33**	.14*	—			
19 Work engagement T3	.28**	.23**	.32**	-.05	.85**	.54**	.31**	.39**	.41**	-.02	.27**	.23**	.31**	.23**	.49**	.27**	.39**	-.05	—		
20 In-role performance T3	.14*	.15*	.23**	-.10	.30**	.27**	.21**	.23**	.24**	-.09	.23**	.08	.55**	.36**	.27**	.08	.23**	.25**	.34**	—	
21 OCBI T3	.29**	.20**	.36**	.01	.25**	.27**	.29**	.25**	.24**	-.01	.05	.05	.31**	.62**	.32**	.18**	.27**	-.05	.29**	.40**	—

Int. = Intention; Incr. = increase; Struc = structural; Soc = social; Chall = challenging; Hind = hindering; JR = job resources; JD = job demands; T1 = Time 1; T2 = Time 2; T3 = Time 3.
* $p < .05$, ** $p < .01$.

TABLE 2
Invariance test of measures of work engagement, in-role performance, and OCBI

	χ^2	df	CFI	TLI	RMSEA	$\Delta\chi^2/\Delta df$	p
Model A	922.87	494	.93	.92	.06		
Model B	936.50	508	.93	.92	.05	13.63/14	.48
Model C	940.44	511	.93	.92	.05	3.94/3	.27
Model D	977.11	528	.93	.92	.05	36.67/17	<.01

χ^2 = Chi-square; *df* = degrees of freedom; CFI = comparative fit index; TLI = Tucker–Lewis index; RMSEA = root-mean-square error of approximation; $\Delta\chi^2/\Delta df$ = change in chi-square and degrees of freedom.

the field of social sciences (Horn, McArdle, & Mason, 1983; Kim & Ji, 2009). We therefore conclude that the measures show satisfactory longitudinal invariance.

Measurement models

Measurement models were examined to check the validity of the constructs. Important to check first is whether job crafting intentions and actual job crafting are different constructs. The four-factor model with two latent factors for job crafting intentions and two latent factors for actual job crafting behaviours showed a significantly better fit than a two-factor model, in which corresponding job crafting intentions and actual job crafting behaviours loaded on the same factor ($\Delta\chi^2 = 333.43$ $\Delta df = 5$, $p < .01$). Model fit indices of the hypothesized model were CFI = .94, TLI = .91, RMSEA = .10, and SRMR = .07.

Next, we examined the full measurement model, which includes 12 latent variables: two latent factors for the job crafting intentions construct, labelled “Intention to craft job resources and challenging job demands” and “Intention to craft hindering job demands”, and two latent factors for the job crafting construct, named “Crafting job resources and challenging job demands” and “Crafting hindering job demands”. In addition, the measurement model included two latent factors for job demands and job resources, two latent factors for work engagement at T1 and T3, two latent factors for in-role performance at T1 and T3, and two latent factors for OCBI at T1 and T3. Residual correlations between T1 and T3 indicators of the same construct were allowed to account for their dependence (Brown, 2006). The fit of this measurement model was adequate: $\chi^2 = 371.20$, $df = 195$, TLI = .95, CFI = .96, RMSEA = .06, SRMR = .05. All indicators had significant loadings on the intended factors (range $\lambda = .67$ –.95; $p < .001$).

Job crafting intentions predict actual job crafting

In Hypothesis 1a, we expected that T1 job crafting intentions predict actual job crafting at T2. The results showed that Intention to craft job resources and

challenging job demands was positively related to Crafting these job resources and challenging job demands ($\lambda = .38$, $p < .001$). In addition, the direct effect from T1 Intention to craft hindering job demands to T2 Crafting hindering job demands was also significant ($\lambda = .46$, $p < .001$). Thus, Hypothesis 1a was supported.

Hypothesis 1b suggested that T1 work engagement predicts T2 job crafting. Work engagement T1 significantly related to Crafting job resources and challenging job demands at T2 ($\lambda = .21$, $p < .001$).

Job crafting mediates the relationship between job crafting intentions and work engagement

In Hypothesis 2a, it was expected that Crafting job resources and challenging job demands at T2 mediate the relationship between T1 Intention to craft structural job resources and challenging job demands and T3 work engagement. Hypothesis 1a already showed that Intention to craft job resources and challenging job demands and crafting these job resources and challenging job demands were positively related. Crafting job resources and challenging job demands, in turn, related significantly to work engagement ($\beta = .20$, $p < .05$), while controlling for T1 work engagement and T1 job resources and job demands (see Figure 1). The direct relationship between Intention to craft job resources and challenging job demands and work engagement was not significant ($\lambda = -.03$, $p = .77$), indicating full mediation. The bootstrap estimate (.07) for the indirect effect fell within the 95% bias-corrected confidence interval (B-CCI: .019–.137), supporting the significance of Crafting job resources and challenging job demands as a mediator in the relationship between Intention to craft job resources and challenging job demands and work engagement.

The results regarding Hypothesis 2b showed that Intention to craft hindering job demands and Crafting hindering job demands were not related to work engagement ($\beta = -.03$, $p = .74$ and $\beta = -.06$, $p = .38$, respectively). Thus, Crafting hindering job demands at T2 did not mediate the relationship between T1 Intention to craft hindering job demands and T3 work engagement.

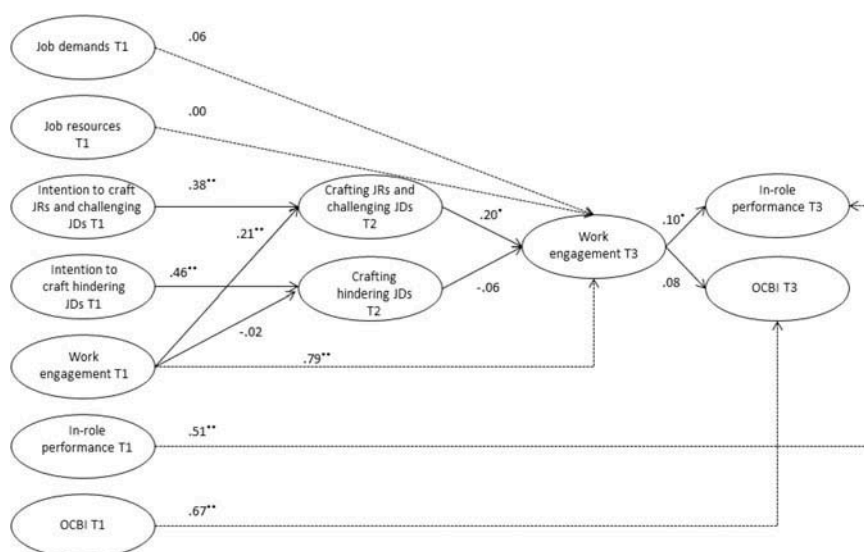


Figure 1. Longitudinal model showing that job crafting positively relates to work engagement and performance. JR = job resources; JD = job demands; OCBI = organizational citizenship behaviour towards individuals. Dotted lines represent controlled relationship. Independent and dependent variables were free to correlate with each other. ** $p < .01$, * $p < .05$.

Work engagement as a mediator in the relationship between job crafting and job performance

In Hypothesis 3, it was proposed that T3 work engagement mediates the relationship between T2 job crafting and T3 in-role performance and OCBI, while controlling for all T1 variables. The results showed that T3 work engagement was significantly associated with in-role performance ($\beta = .10$, $p < .05$) but not with OCBI ($\beta = .08$, $p = .22$). The relation between Crafting job resources and challenging job demands and in-role performance was not significant ($\beta = .11$, $p = .14$), indicating full mediation. The bootstrap results showed that the indirect effect of Crafting job resources and challenging job demands to in-role performance via work engagement was significant (.01, B-CCI = .001–.022, $p < .05$). The relation between Crafting job resources and challenging job demands and OCBI was not significant ($\beta = .09$, $p = .11$), indicating that T3 OCBI was not influenced by T2 Crafting job resources and challenging job demands and T3 work engagement.

Crafting hindering job demands related negatively to in-role performance ($\beta = -.23$, $p < .001$) but was unrelated to work engagement and OCBI ($\beta = -.06$, $p = .38$, $\beta = -.02$, $p = .70$, respectively). These findings show that T3 work engagement does not mediate the relationship between T2 Crafting hindering job demands and T3 job performance and OCBI. In sum, Hypothesis 3 was supported with regard to the mediation of work engagement in the relationship between Crafting job resources and challenging job demands and job performance. In reference to Crafting hindering job demands, the hypothesis was not supported, but an interesting negative effect on in-role performance was found. The fit of the

hypothesized model was acceptable, $\chi^2 = 794.00$, $df = 382$, TLI = .91, CFI = .93, RMSEA = .06, SRMR = .07.

DISCUSSION

The present study examined whether job crafting intentions and work engagement predicted actual job crafting activities in the next month and whether actual job crafting, in turn, predicted work engagement and indirectly in-role performance and OCBI over time. In what follows, we discuss the most important contributions of the present study.

Theoretical contributions

The first contribution of the present study is that it provides more insight into the predictors of job crafting behaviours. It was found that the relationships between job crafting intentions and actual job crafting behaviours were strongly significant. The standardized estimates from job crafting intentions to actual job crafting were close to the magnitude of the sample-weighted average correlation of .53 between intentions and behaviour found in the meta-analysis by Sheeran (2002). This effect is considered to be large (Sheeran, 2002) and suggests that employees with job crafting intentions were most likely to perform job crafting activities in the future. In addition, work engagement reported at T1 was also predictive of crafting job resources and challenging job demands (but not crafting hindering job demands) in the next month. This finding underscores the importance of work engagement for employee proactive behaviours (Sonnentag, 2003) and may also indicate

that engaged employees want more from their work (Warr & Inceoglu, 2012).

A second theoretical contribution of this study is that crafting job resources and challenging job demands positively predicted work engagement one month later, implying that employees who increased these job characteristics (but not those who decreased their hindering job demands) increased their own work engagement through job crafting. Because we were able to control for job characteristics, this finding suggests that only focusing on the effect of job characteristics on employees' work experience does not fully explain the existence or emergence of work engagement. Importantly, job crafting predicted work engagement over and above job characteristics. By autonomously increasing the availability of job resources, employees allow themselves to do their job in a way that is consistent with their preferences, values, and/or skills (Berg et al., 2008; Tims et al., 2012). As a result, employees become more engaged. In a similar vein, initiating more challenging job tasks or demands predicted higher levels of vigour, dedication, and absorption. Complex and intellectually demanding tasks are found to give rise to feelings of interest and involvement (Amabile, 1996) and therefore likely foster work engagement. These results provide additional support for a gain spiral in which engaged employees are more likely to proactively change their job resources and challenging job demands which in turn leads to higher levels of work engagement (Bakker, 2011; Bakker & Demerouti, 2014; Hakanen, Perhoniemi, et al., 2008).

In contrast, however, crafting decreasing hindering job demands was not related to work engagement. Although earlier studies theoretically argued why decreasing hindering job demands may be beneficial for employees (e.g., to reduce negative work and worker outcomes; Podsakoff, LePine, & LePine, 2007; to avoid or cope with negative job aspects; Berg et al., 2008), there was no statistical evidence for this assertion. In line with earlier studies (Tims et al., 2012; Tims, Bakker, Derks, & Van Rhenen, 2013), we can now conclude that decreasing hindering job demands does not lead to enhanced motivation and performance. This job crafting dimension is different from the other three job crafting dimensions.

Some studies have found that decreasing hindering job demands is related to burnout (Tims et al., 2012), which may indicate that employees who attempt to decrease their hindering demands may perceive to have no other options to prevent worse negative health outcomes. Seen this way, decreasing hindering job demands may share similarities with avoidance-oriented coping, in which people try to evade a problem. The other job crafting dimensions may be more similar to approach-oriented coping, in which people attempt to confront problems and deal directly with them (Roth & Cohen, 1986). Important to note is that job crafting is

conceptually different from coping as coping refers to strategies to manage stress (Folkman & Moskowitz, 2004), whereas job crafting is a strategy to manage work in such a way that it better fits the preferences, skills, and values of the employee (Wrzesniewski & Dutton, 2001). Clearly, further research is required to examine the process that underlies this relationship.

Finally, building on extant research, our study contributed to the literature on work engagement and job performance. Engaged employees are focused on performing their core job tasks well (Bakker & Bal, 2010; Christian et al., 2011; Demerouti & Bakker, 2011; Halbesleben & Wheeler, 2008), but engaged employees did not report more OCBI than nonengaged employees. It may be that engaged employees are more focused on their in-role performance than their extra-role performance. However, this relationship needs further exploration as there are also indications that work engagement is associated with both in-role performance and OCB (Rich et al., 2010). In addition, in the present study, the correlations between increasing job resources and increasing challenging job demands and OCBI are all significant, whereas these relationships do not reach significance in the research model. While relating job crafting behaviours to the specific OCBI behaviours (e.g., helping others who have been absent or have a high workload, assisting supervisor, taking personal interest in other employees), these positive relationships are as expected. For example, employees who enjoy having variety at work and learning new things may be more likely to help others and assist their supervisor without being asked as this OCB may create learning opportunities. We therefore expect that the nonsignificant finding is likely due to the stringent test we performed by controlling for T1 OCBI.

Limitations

There are some limitations that must be acknowledged. First, work engagement, in-role performance, and OCBI were measured at the same measurement occasions (T1 and T3), which precludes causal inferences regarding the mediating role of work engagement. Additional analyses, in which all three variables were modelled as dependent variables, showed that the fit of the hypothesized model was significantly better than the alternative model, providing more evidence that work engagement is not only an outcome of job crafting but also a mediator between antecedents and outcomes (cf. Saks, 2006). In addition, these findings are in line with previous studies that examined the causal effect of work engagement on job performance (Bakker & Bal, 2010; Salanova et al., 2005).

Another limitation is that we were not able to measure all variables at all measurement occasions because we had to reduce the time participants needed to fill out the questionnaires. However, we did make sure that we had

premeasures and postmeasures of the dependent variables so that we could control for previous levels of the dependent variables.

A third limitation of the study is that we were not able to explain the finding with respect to the job crafting dimension “Decreasing hindering job demands”. This type of job crafting consistently shows opposite relationships in comparison to the job crafting dimensions related to increasing job resources and challenging job demands. Although employees are least likely to engage in this type of job crafting (in terms of mean level), it is important to learn what their motivations are for decreasing these demands. Is it indeed a strategy used by slightly burned-out employees who try to prevent dropping out from a burnout? Or can burnout function as a mediator between decreasing hindering job demands and in-role performance instead of work engagement? According to self-determination theory (Deci & Ryan, 2000), the frustration of basic psychological needs, for example, through high levels of hindering job demands, may explain the emergence of burnout (Van Den Broeck, Vansteenkiste, De Witte, & Lens, 2008). In addition, what harm may decreasing hindering job demands do in relation to the employees’ reputation or performance assessment? What do employees think to win from decreasing hindering job demands? Furthermore, it could be that increasing social job resources, such as support from colleagues or the supervisor, may be a better strategy to deal with these job demands. This could be an interesting research question for future studies.

Practical implications

The findings of the present study have at least two practical implications. First, intentions are found to be of importance for future job crafting behaviours. As not every individual may be inclined to engage in job crafting, a means to increase employees’ awareness about their work environment and how they can influence their job characteristics may be a feedback intervention. By providing employees with feedback on their job demands and job resources combined with suggestions how levels of job demands and resources may be influenced, employees may be encouraged to think about how they can change their work environment with relatively simple adaptations. Also, the suggestions may signal to employees that these proactive behaviours are welcomed by the organization. As a result, employees may formulate intentions to enact their job characteristics and take more responsibility for their work engagement. Such an intervention may also be helpful in teaching employees to form implementation intentions (Gollwitzer, 1993, 1999) that specify when, where, and how one will perform specific behaviours. Implementation intentions may increase the stability of the intention and make it more likely that intentions are

translated into behaviours (Webb & Sheeran, 2006). Formulating implementation intentions about when, where (e.g., in the next staff meeting), and how (e.g., asking the team) to craft a specific job characteristic may be an important first step towards optimizing the work environment and improving engagement and job performance.

Using the theory of planned behaviour (Ajzen, 1991, 2012), another way to encourage employees to formulate job crafting intentions, and thereby the likelihood that they show job crafting behaviours, may be by changing employees’ attitudes about job crafting, creating social norms for job crafting, and increasing employees’ perceived behavioural control. Individuals will be most likely to formulate job crafting intentions when they hold a positive attitude towards job crafting, when they feel social pressure to engage in job crafting, and when they perceive job crafting to be easy. Organizational interventions could use these principles to stimulate job crafting among employees.

Finally, the study showed that employees who decreased their hindering job demands were not more engaged. Moreover, crafting hindering job demands was related to lower levels of in-role performance. It seems important that hindering demands that by definition hinder the attainment of goals (Crawford et al., 2010) are reduced to a minimum. Although employees may decrease their hindering job demands, they seem to impair work motivation and subsequently job performance.

Conclusion

Several recent studies demonstrated that job crafting is an important work-related phenomenon that is related to positive outcomes, such as work engagement and job performance. The present study contributed to this literature by showing that job crafting intentions and work engagement are important predictors of actual job crafting which in turn related to work engagement and job performance. We can conclude that employees experience engagement when they craft their job resources and challenging job demands. These employees are valuable for organizations because they are more likely to focus their energies on their in-role tasks.

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