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Proactively shaping your ideal work space

A study examining the relationships between cognitive job crafting, work engagement, performance and the mediating role of the fulfilment of needs.

Saskia Neuteboom (5482968)

Reviewer: Veerle Brenninkmeijer

Second reviewer: Bibiana Armenta Gutierrez

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Abstract

This cross-sectional study examined whether cognitive and behavioural job crafting may lead to work engagement and performance through fulfilment of psychological needs. Data were collected among 131 Dutch employees collected using snowball sampling and via an HR consultancy company for recruitment, selection and talent development that operates within the life sciences and health care branch. Results were analysed using a linear regression analysis and a PROCESS macro analysis. As hypothesized, cognitive job crafting, crafting structural job resources and crafting challenging job demands were positively associated with work engagement and performance via increased fulfilment of psychological needs.

Furthermore, crafting hindering job demands and crafting social job resources were not related to increased work engagement and performance. This study is among the first to examine the relationship between cognitive job crafting and work engagement and performance. It is also among the first to examine the role of fulfilment of psychological needs in the relationship between job crafting and work engagement and performance. The theoretical and practical implications are discussed.

Keywords: cognitive job crafting, job crafting, work engagement, performance, fulfilment of needs

Introduction

Organisations have to change constantly today. Technological changes, rapid innovations and competitive pressures lead to a different way of designing a job. Employees are no longer viewed as passive performers of their jobs and tasks, but employees shape the job (Tims & Bakker, 2010). The traditional work environment in which organisations were hierarchical nowadays shifts to flat organisations. Employees are given more trust, freedom and responsibilities, but are also expected to act more proactive and flexible (Stam, 2011). In order to cope with organisational changes, job crafting behaviours are used as a tool (Petrou, Demerouti & Schaufeli, 2018).

Job crafting focusses on the changes that employees make in their jobs to benefit their own jobs. These changes in the job are bottom-up instead of the traditional top-down approach in which managers create jobs and roles for the employees (Grant, Fried, Parker & Frese, 2010). Job crafting is defined as “the physical and cognitive changes individuals make in the task or relational boundaries of their work” (Wrzesniewski, & Dutton, 2001, p. 179). Job crafting generally has a positive effect on work engagement and performance, but this has mostly been examined for the behavioural forms of job crafting (Bakker, Tims & Derks, 2012). Besides the behavioural forms, another form of job crafting is cognitive job crafting. Cognitive job crafting focusses on the judgement of the work by an employee. Cognitive job crafting is changing perceptions of one’s job to enhance meaningfulness (Berg, Dutton & Wrzesniewski, 2013). Almost no research has been done on the relationship between cognitive job crafting and work engagement and performance.

In the present study we aim to examine whether cognitive job crafting is related to work engagement and performance in order to fill this gap in the existing scientific knowledge. A second aim is to examine whether cognitive job crafting may help individuals to fulfil their needs at work, which eventually leads to work engagement and work performance. This study will provide insight in the underlying mechanisms that play a role in the relationship between cognitive job crafting and work engagement and performance by adding the influence of the fulfilment of needs and the self-determination theory. The self-determination theory is an empirically based theory of human motivation, development and wellness. It states that three psychological needs are the basis of (intrinsic) motivation (Deci & Ryan, 2008). This study will contribute to the existing literature as not much is known about the underlying process relating cognitive and behavioural job crafting to work engagement and performance (Demerouti, 2014).

Job Crafting

The first use of the term job crafting, and the definition used in the present study, came from Wrzesniewski and Dutton (2001). The study mentioned that cognitive job crafting is one of the components of job crafting, but specific research on the subject started years later and still not a lot is known about cognitive job crafting.

Cognitive job crafting is, comparing to the other forms of job crafting, the only non-behavioural form of job crafting. No aspect of the job itself is changed, but the meaning of the work (Wrzesniewski & Dutton, 2001). It is the only form of job crafting that can be done without actively changing a part of the job and therefore the only form that can be done in every environment (Zhang & Parker, 2019). Therefore, it has added value to study this form of job crafting.

Cognitive job crafting leads to an increase in perceived meaningfulness of one's work (Berg et al., 2013). Meaningful work is seen as a deeper level of intrinsic motivation (Chalofsky & Krishna, 2009). A positive relationship is found between meaningful work and work engagement and performance (Geldenhuis, Laba & Venter, 2014; Harris, Kacmar & Zivnuska, 2007). Because cognitive job crafting is associated with an increase in perceived meaningfulness at work and meaningfulness is positively associated with work engagement and performance, the following hypotheses are formulated:

H1a. Cognitive job crafting is positively associated with work engagement

H1b. Cognitive job crafting is positively associated with work performance

Behavioural job crafting is defined as the physical changes individuals make in the task or relational boundaries of their work (Wrzesniewski & Dutton, 2001). It is divided in four dimensions: increasing structural job resources, increasing social job resources, decreasing hindering job demands and increasing challenging job demands. Structural job resources refer to the aspects of job design, for instance variety. Social job resources refer to the resources involving the help from other people. Hindering job demands are aspects of the job that cost effort and energy, and they hinder job functioning. Challenging job demands cost effort and energy, but do help job functioning (Tims, Bakker, Derks & van Rhenen, 2013).

The job demands-resources model is used as a framework to determine what effect job crafting has on work engagement (Tims, Bakker & Derks, 2013). Work engagement is a positive work related state of mind. Engaged employees have energy and are absorbed in their work. Their work is inspiring and leads to enthusiasm and pride (Schaufeli & Bakker, 2010).

The job demands-resources model explains work engagement on the basis of job demands and job resources. Job demands are the physical, psychological, social and organisational aspects of the job for which long-term physical and/or psychological efforts or skills are required (Demerouti, Bakker, Nachreiner & Schaufeli, 2001). Examples of job demands are work pressure and emotional load (Bakker & Demerouti, 2007). Job resources are the physical, psychological, social and organisational aspects of the job that help achieve work goals. Examples of job resources are social support, autonomy and feedback (Bakker & Demerouti, 2007). In this conceptualisation, job crafting changes characteristics of a job in order to reduce job demands or increase job resources (Van den Heuvel, Demerouti & Peeters, 2015; Roczniowska & Bakker, 2016).

In line with the job demands-resources model an increase in job resources leads to higher work engagement and performance (Bakker, Demerouti & Verbeke, 2004; Bakker & Bal, 2010). Job crafting in order to increase job resources has a positive effect on work engagement and performance (Tims et al., 2013; Tims, Bakker & Derks, 2015). Based on this reasoning and the research findings presented above, the following hypotheses are formulated:

H2a. Crafting job resources and challenging demands are positively associated with work engagement

H2b. Crafting job resources and challenging demands are positively associated with work performance

In contrary, reducing hindering job demands is negatively associated with work engagement and performance (Tims et al., 2013; Brenninkmeijer & Hekkert-Koning, 2015). The crafted job with a decrease in hindering job demands might be less psychologically stimulating, leading to boredom and thus decreased levels to work engagement (Petrou, Demerouti, Peeters, Schaufeli & Hetland, 2012). Therefore, the following hypotheses are formulated:

H3a. Crafting hindering demands are negatively associated with work engagement

H3b. Crafting hindering demands are negatively associated with work performance

Job crafting and fulfilment of psychological needs

To understand the relationship between job crafting and fulfilment of needs, the self-determination theory is used as a framework. The self-determination theory focusses on three types of psychological needs that are the basis of (intrinsic) motivation. The three types are autonomy, competence and relatedness. Autonomy is the need to control the course of one's life. Competence is the need to be effective in dealing with one's environment and relatedness is the need to have a close, affectionate relationship with others (Deci & Ryan, 2008).

Baumeister proposed that a fourth dimension, meaning, should be added. The need for meaning includes the need for purpose, the need for value and justification, the need for efficacy and the need for self-worth (Baumeister, & Wilson, 1996). Many people need to feel and believe that their work is meaningful and contribute to the well-being of others or the environment (Schaufeli, 2016). Therefore, it has added value and it will be included as a fourth need in this study.

Researchers have found cognitive job crafting to be positively associated with the needs of the self-determination theory (Bindl, Unsworth, Gibson & Stride, 2019; Hornung, 2019). In addition, cognitive job crafting can develop a sense of meaningfulness by altering how one thinks about the job characteristics. This can fulfil the need for meaning (Pateraki & Flodin, 2019). Based on this information, the following hypothesis is formulated:

H4. Cognitive job crafting is positively associated with the fulfilment of psychological needs

Furthermore, different studies have found that behavioural job crafting is positively associated with the needs of the self-determination theory (Slemp & Vella-Brodrick, 2014; Bakker & van Woerkom, 2017). An explanation for this association is that crafting job resources and challenging demands are closely associated with psychological needs (Ryan & Deci, 2000). For instance, employees might increase their social resources by asking a colleague for feedback at work, thereby fulfilling their need for relatedness (Bakker, Rodriguez-Muñoz & Vergel, 2016). In addition, Clausen and Borg (2011) found that hindering job demands were negatively associated with meaning at work and job resources were positively associated with meaning at work. Therefore the following hypotheses are formulated:

H5a. Crafting job resources and crafting challenging demands are positively associated with the fulfilment of psychological needs

H5b. Crafting hindering demands is negatively associated with the fulfilment of psychological needs

According to the self-determination theory, if employees are able to fulfil their three innate psychological needs (autonomy, competence and relatedness), they will function optimally and therefore experience high levels of work performance (Ryan & Deci, 2000). Fulfilment of needs is also positively associated with work engagement (Van den Broeck, Vansteenkiste, de Witte & Lens, 2008). More studies confirm these findings regarding the self-determination theory (Arshadi, 2010; Silman, 2014) and Schaufeli (2016) adds that fulfilment of the need for meaning results in work engagement as well, therefore the following hypotheses are formulated:

H6a. The fulfilment of psychological needs is positively associated with work engagement

H6b. The fulfilment of psychological needs is positively associated with work performance

Looking at the former findings it can be expected that fulfilment of psychological needs plays a mediating role in the relationship between cognitive job crafting and work engagement and performance. Consequently, the following hypotheses are formulated:

H7a. The fulfilment of needs mediates the relationship between the different aspects of job crafting and work engagement

H7b. The fulfilment of needs mediates the relationship between the different aspects of job crafting and work performance

Research model

In the present study several hypotheses will be tested. Figure 1 provides an overview of the expected relationships among the study variables.

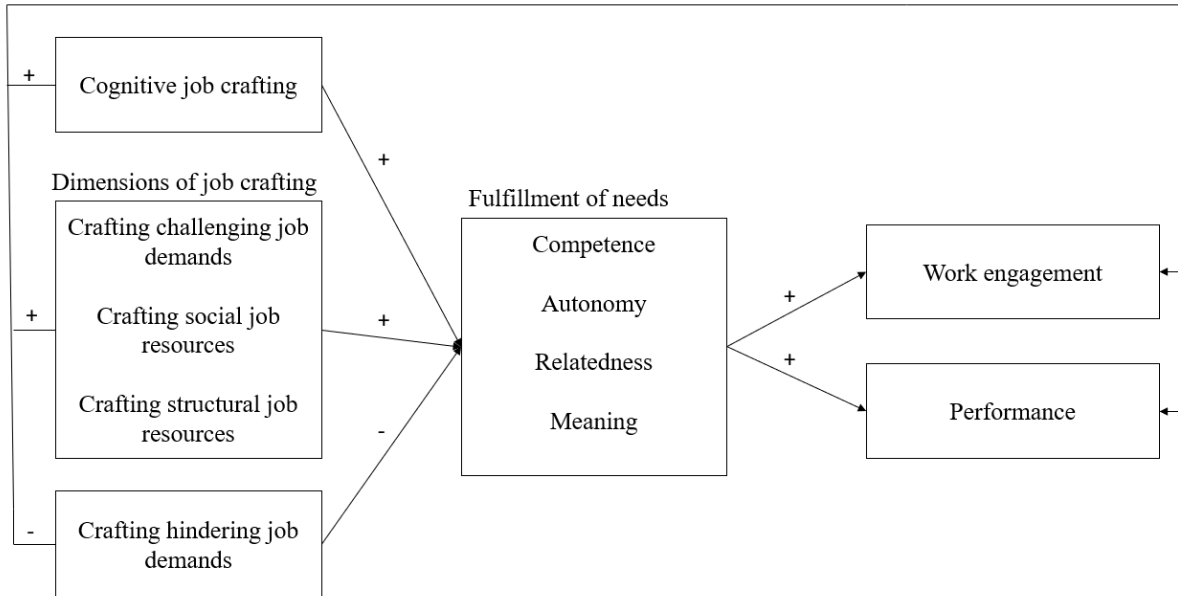


Figure 1. Proposed model of the relationships between cognitive and behavioural job crafting, fulfilment of needs, work engagement and performance.

Method

Participants

The total number of participants in this study was 131, consisting of 75 women (57.3%) and 56 men (42.7%). The participants were 19 to 72 years old, with a mean age of 42.41 ($SD = 14.34$). The participants worked more than their contract hours on average, as reported in Table 1 along with other contractual differences.

Table 1

Contract hours per week, working hours per week, years active in the field and years active in the current job of the research participants.

	Minimum	Maximum	Mean	<i>SD</i>
Contract hours	0	46	29.16	13.94
Working hours	0	60	36.04	12.48
Active in the field	0	50	20.21	13.34
Active in current job	0	24	4.93	5.50

Note. $N = 131$.

Of the research population 48 participants had a managing position (36.6%) and 25 participants were entrepreneur (19.1%). Most participants had a high educational level (HBO or WO), as reported in Table 9 in Appendix 3 along with other work-related descriptive variables.

Ethics Review

This study is registered at the Ethics Review Board of the Faculty of Social & Behavioural Sciences. For the data collections the participants received a briefing with information, which is showed in Appendix 1. The briefing informed the participants about the study and its importance. They also received an informed consent with the terms of confidentiality and anonymity. Only when the participants accepted these terms, they were able to start with the survey.

Procedure

The data were collected among candidates from the HR consultancy company Derks & Derks B.V. and among personal connections through LinkedIn and What's App from the 22nd of April until the 28th of May. To collect more data, snowball sampling is used among the personal connections. They were asked to spread the survey among their own connections.

The participants received an invitation to participate in the study by e-mail on the 22nd of April. This e-mail stressed the importance of the study and also contained the link to the online survey, which started with some extra information about the study and the informed consent.

Measures

The Dutch questions can be found in Appendix 2.

Influence of corona. While setting up this study and collecting the data, the corona-virus spread across the Netherlands. This could influence the results, so questions about the situation were added to the survey. The questions are based on our own experiences and expectations, since no one has ever experienced such a situation.

Seven items were added about the influence that the corona-virus had on the working life. All items were rated on a 5-point Likert scale that ranged from 'totally disagree' (1) to 'totally agree' (5). An example of an item in this scale was: 'It hinders my performance at work.' Item 5, 6 and 7 had to be recoded, because of a positive formulation, e.g. 'It shows me I can do things differently at work.' Cronbach's alpha for the total scale on the influence of the corona-virus was .69, which showed questionable reliability. Item 5 and 6 correlated negatively with most of the other items, so these items were removed from the scale. Without item 5 and 6 Cronbach's alpha increased to .80. Looking at the explained variance without item 5 and 6, item 7 stood out. Item 7 only had a small correlation with the other items and when deleting the item, the explained variance increased. Because of that, item 7 was deleted from the scale. Cronbach's alpha increased to .86 after deleting item 7.

Item 5, 6 and 7 were the recoded items about the possible positive aspects of the corona-virus. Although the reliability of the remaining items of the scale is good, the scale is only about the negative influence of the corona-virus now. Cronbach's alpha for item 5, 6 and 7 was .61, which is questionable. The items will be reported separately in the results section. These differences in answering showed that participants can see either the positive and negative consequences of corona and there is not a clear opinion or consequence that can be established.

Cognitive job crafting. Cognitive job crafting was measured using the 12 items on cognitive job crafting based from validated questionnaires of Ybema & Brenninkmeijer (2018) and Slemp & Vella-Brodrick (2013). All items were rated on a 5-point Likert scale that ranged from never (1) to very often (5). An example of an item was: ‘I think about the goals I want to achieve with my work.’ Cronbach’s alpha for the total cognitive job crafting scale was .83.

Job crafting. Job crafting was measured using the Job Crafting Scale of Tims, Bakker & Derks (2012). This questionnaire consists of 21 items and is divided in four dimensions. All items were rated on a 5-point Likert scale that ranged from never (1) to very often (5). There were six items on reducing hindering demands, example given ‘I make sure I don't have to make as much difficult decisions in my work’ ($\alpha = .74$), five items on increasing social resources, e.g. ‘I asked my colleagues for advice’ ($\alpha = .72$), five items on increasing structural resources, e.g. ‘I try to learn new things at work’ ($\alpha = .74$) and five items on increasing challenging demands, e.g. ‘When it is quiet at work, I often see an opportunity to start new projects’ ($\alpha = .74$).

Fulfilment of needs. Autonomy, competence and relatedness were measured using the Work-Related Basic Need Satisfaction Scale of Van den Broek et al. (2010). The questionnaire consists of 18 items which are divided in these three dimensions. All items were rated on a 7-point Likert scale that ranged from totally disagree (1) to totally agree (5). Seven items were scored reverse, thus recoded. There were six items on autonomy, e.g. ‘I feel like I can be myself at my job’ ($\alpha = .48$). Item 3 ‘If I was able to, I would approach my work differently’ correlated negatively with the other items, possibly because it was the only question formulated differently. The other questions were about the situation right now and this question was about a possible future situation. The item was removed. After removing item 3, Cronbach’s alpha for autonomy was .79.

There were six items on competence, e.g. ‘I am good at my job’ ($\alpha = .84$) and also six items on relatedness, e.g. ‘My colleagues are real friends’ ($\alpha = .73$). For the fourth need, meaning, four items are added. Three of these are based on the questions used by Rahmadani Schaufeli, Ivanova & Osin (2019). One of these items was ‘My work is full of meaning for me.’ These items were translated to Dutch. The fourth question was added specifically for this study: ‘My job is an important part of my life.’ The dimension meaning had a Cronbach’s alpha of .76.

Work engagement. Work engagement is measured using the Utrechtse Bevoegenheidsschaal (UBES) of Bakker and Schaufeli (2003). The questionnaire consists of

17 items divided in three dimensions. All items were rated on a 7-point Likert scale that ranged from never (1) to daily (7). There were six items on vitality, e.g. ‘When I am working, I feel fit and strong’ ($\alpha = .84$), five items on dedication, e.g. ‘The work I do, is helpful and meaningful’ ($\alpha = .87$) and six items on absorption, e.g. ‘When I am working, the time flies’ ($\alpha = .79$). Cronbach’s alpha for the total scale on work engagement was .87.

Work performance. Work performance is measured using the 16-item Performance scale of Goodman and Syvanteck (1999). This scale consists of two forms of work performance. All items were rated on a 4-point Likert scale that ranged from ‘totally disagree’ (1) to ‘totally agree’ (4). There were seven items on contextual performance, e.g. ‘You help other colleagues with their work when they have been absent’ ($\alpha = .76$) and nine items on task performance, e.g. ‘You achieve the objectives of your job’ ($\alpha = .84$). Cronbach’s alpha for the total scale on work performance was .93.

Burnout. Burnout is measured using the Burnout Assessment Tool of Schaufeli, de Witte and Desart (2019). This scale consists of 33 items, divided in six dimensions. All items were rated on a 5-point Likert scale that ranged from never (1) to always (5). The different dimensions were exhaustion, emotional disturbance, cognitive disturbance, mental distancing, psychosomatic complaints and physical tension complaints. There were eight items on exhaustion, e.g. ‘At work I feel mentally exhausted’ ($\alpha = .89$), five items on emotional disturbance, e.g. ‘At work I feel like I have no control over my emotions’ ($\alpha = .85$), five items on cognitive disturbance, e.g. ‘At work I have a hard time paying attention’ ($\alpha = .85$), five items on mental distancing, e.g. ‘I feel indifferent about my job’ ($\alpha = .90$), five items on psychosomatic complaints, e.g. ‘I suffer from headaches’ ($\alpha = .84$) and five items on physical tension complaints, e.g. ‘I have problems with falling or staying asleep’ ($\alpha = .74$). Cronbach’s alpha for the total scale on burnouts is .94.

Statistical analysis

The statistical analysis is performed with the Statistical Program of Social Sciences (SPSS) Version 25. First the factor analysis is executed to check the factor structure of the questionnaires. After this, assumptions regarding outliers, homoscedasticity, linearity and multicollinearity were checked. Then descriptives were reported and the correlations between all variables were examined. Multiple linear regressions were performed for the relationship between cognitive and behavioural job crafting and the fulfilment of needs, and between the fulfilment of needs and work engagement and performance. To test the mediation-effects, the PROCESS macro using bootstrapping (version 3) was performed (Hayes, 2013). In all

analyses bootstrapping is used to estimate indirect effect by repeating 5000 samples of the original data set. Bootstrapping increased the statistical power (Hayes, 2013).

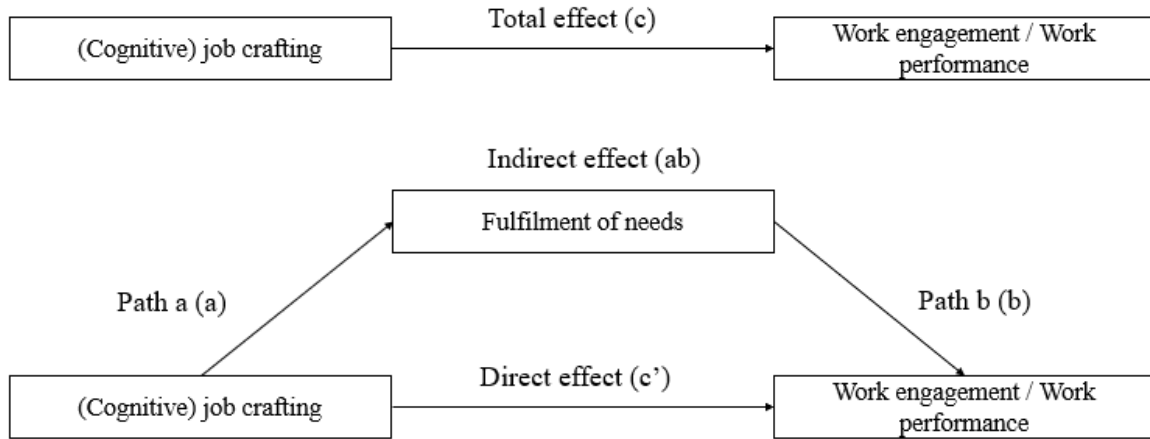


Figure 2. Basic model for mediation: total effect (c), indirect effect (ab) and direct effect (c').

Results

Descriptives

The descriptive results of the study variables are reported in Table 2. Because of incomplete questionnaires, the number of participants is different for the different variables. Compared to the other dimensions of job crafting, crafting hindering demands had a relatively low mean ($M = 1.86$). In addition, the means of fulfilment of the need for competence and meaning were higher than the means of fulfilment of the need for autonomy and relatedness.

Table 2

Meaning, standard deviation and number of participants of all variables.

	<i>M</i>	<i>SD</i>	<i>N</i>
Cognitive job crafting	3.25	0.56	121
Crafting hindering demands	1.86	0.54	116
Crafting social resources	2.64	0.66	116
Crafting structural resources	3.65	0.62	116
Crafting challenging demands	3.09	0.71	116
Need for autonomy	5.18	1.17	113
Need for competence	5.81	0.88	113
Need for relatedness	5.13	0.93	113
Need for meaning	5.72	0.78	113
Work engagement	5.16	0.93	112
Work performance	3.18	0.38	110
Burnout	1.94	0.53	105

The corona-virus had a considerable influence on the economy and the way people work, because of different measures taken and new rules in the Netherlands (CBS, 2020). Almost half of the research sample (43.4%) was obliged to work from home while the questionnaire was completed, although they normally did not work from home. Some participants still worked at location (13.8%) and some already worked from home (7.2%). Others wrote about another way their work situation changed (21.6%), such as the company they normally worked at being closed or only working home for a specific part of the week.

The descriptive results of the items on the corona-virus are reported in Table 3. The items about the positive influence of the corona-virus (5, 6 and 7) have a higher mean than the items about the negative influence of the virus.

Table 3

Meaning, standard deviation and number of participants of the questions on the corona-virus.

	<i>M</i>	<i>SD</i>
Negative influence (Item 1-4)	2.78	1.06
Item 5	3.11	1.15
Item 6	3.59	1.09
Item 7	3.31	1.12

N = 125.

The correlations between the variables are reported in Table 10 in Appendix 4. The results of the variables crafting hindering job demands and crafting social resources are noticeable. In previous studies all dimensions of job crafting correlate significantly (Tims, Bakker & Derks, 2013). This is not the case in this study.

Furthermore, according to the literature work engagement and burnout are opposite poles and correlate negatively (González, Schaufeli, Bakker & Lloret, 2006). This correlation is not found. Burnout showed few significant results, so this variable is not included in further analyses.

Job crafting and work engagement

To examine the relation between cognitive and behavioural job crafting and work engagement, a multiple regression analysis was performed. The main effect of cognitive and behavioural job crafting on work engagement were jointly significant ($F(5,106) = 7.49, p < .01$), with an R^2 of .261. Cognitive job crafting ($\beta = 0.35, t(111) = 2.13, p < .05$) and crafting challenging demands ($\beta = 0.33, t(111) = 2.37, p < .05$) significantly predicted value of work engagement. Crafting hindering demands ($\beta = -0.28, t(111) = -1.86, ns$), crafting social resources ($\beta = -0.15, t(111) = -1.15, ns$) and crafting structural resources ($\beta = 0.25, t(111) = 1.52, ns$) did not significantly predict work engagement. Based on these results, *H1a* is supported, *H2a* is partially supported and *H3a* is not supported.

Based on these findings can be concluded that cognitive job crafting and crafting challenging demands were associated with increased work engagement.

Job crafting and work performance

To examine the relation between cognitive and behavioural job crafting and work performance, a multiple regression analysis was performed. The main effect of cognitive and behavioural job crafting on work performance were jointly significant ($F(5,104) = 9.06, p < .01$), with an R^2 of .303. Cognitive job crafting ($\beta = 0.13, t(109) = 2.02, p < .05$) significantly predicted value of work performance. Therefore, *H1b* is supported.

Crafting social resources ($\beta = -0.15, t(109) = -2.91, p < .01$), crafting structural resources ($\beta = 0.19, t(109) = 2.97, p < .01$) and crafting challenging demands ($\beta = 0.11, t(109) = 2.02, p < .05$) significantly predicted value of work performance. Contrary to expectations crafting social resources was associated with lower work performance. Therefore, *H2b* is partially supported.

Crafting hindering demands did not predict work performance ($\beta = -0.01, t(109) = -0.08, ns$). Hence, *H3b* is not supported.

Concluding, cognitive job crafting, crafting structural demands and crafting challenging demands were associated with increased work performance. Contrary to expectations, crafting social resources was associated with decreased work performance.

Job crafting and fulfilment of needs

A multiple linear regression was calculated to predict the fulfilment of the need for autonomy, competence, relatedness and meaning based on cognitive and behavioural job crafting.

Autonomy. The main effects of cognitive and behavioural job crafting on fulfilment of the need for autonomy were jointly significant ($F(5,107) = 4.47, p < .01$), with an R^2 of .173. Crafting social resources ($\beta = -0.50, t(112) = -2.92, p < .01$) and crafting structural resources ($\beta = 0.51, t(112) = 2.32, p < .05$) significantly predicted value of fulfilment of the need for autonomy. Cognitive job crafting ($\beta = -0.29, t(112) = -1.31, ns$), crafting hindering demands ($\beta = -0.12, t(112) = -0.62, ns$) and crafting challenging demands ($\beta = 0.32, t(112) = 1.75, ns$) had no significant effect.

Competence. The main effects of cognitive and behavioural job crafting on fulfilment of the need for competence were jointly significant ($F(5,107) = 9.43, p < .01$), with an R^2 of .306. Crafting social resources ($\beta = -0.38, t(112) = -3.25, p < .01$) and crafting structural resources ($\beta = 0.65, t(112) = 4.30, p < .01$) significantly predicted value of fulfilment of the need for competence. Cognitive job crafting ($\beta = 0.09, t(112) = 0.56, ns$), crafting hindering demands ($\beta = -0.19, t(112) = 0.16, ns$) and crafting challenging demands ($\beta = 0.11, t(112) = 0.90, ns$) had no significant effect.

Relatedness. The main effects of cognitive and behavioural job crafting on fulfilment of the need for relatedness were jointly significant ($F(5,107) = 3.21, p < .05$), with an R^2 of .131. Cognitive job crafting ($\beta = -0.42, t(112) = -2.39, p < .05$) and crafting structural resources ($\beta = 0.47, t(112) = 2.61, p < .05$) significantly predicted value of fulfilment of the need for relatedness. Crafting hindering demands ($\beta = 0.03, t(112) = 0.16, ns$), crafting social resources ($\beta = 0.08, t(112) = 0.57, ns$) and crafting challenging demands ($\beta = 0.17, t(112) = 1.13, ns$) had no significant effect.

Meaning. The main effects of cognitive and behavioural job crafting on fulfilment of the need for meaning were jointly significant ($F(5,107) = 10.80, p < .01$), with an R^2 of .335. Cognitive job crafting ($\beta = 0.46, t(112) = 3.51, p < .01$) and crafting hindering demands ($\beta = -0.46, t(112) = -3.90, p < .01$) significantly predicted value of fulfilment of the need for meaning. Crafting social resources ($\beta = -0.13, t(112) = -1.23, ns$), crafting structural resources ($\beta = 0.19, t(112) = 1.47, ns$) and crafting challenging demands ($\beta = 0.18, t(112) = 1.65, ns$) had no significant effect.

Contrary to expectations, cognitive job crafting was negatively associated with fulfilment of the need for relatedness and no significant effects were found between cognitive job crafting and fulfilment of the need for autonomy and competence. However, cognitive job

crafting was positively associated with fulfilment of the need for meaning. *H4* is partially supported.

In line with *H5a* crafting structural resources was positively associated with fulfilment of the need for autonomy, competence and relatedness. Contrary to expectations, crafting social resources was negatively associated with fulfilment of the need for autonomy and competence. Crafting challenging demands did not significantly predict the fulfilment of any need. *H5a* is partially supported for crafting structural resources.

In line with *H5b* crafting hindering demands was negatively associated with fulfilment of the need for meaning. However, no significant effects were found between crafting hindering demands and fulfilment of the need for autonomy, competence and relatedness. Therefore, *H5b* is partially supported.

Fulfilment of needs and work engagement

A multiple linear regression was performed to predict work engagement based on fulfilment of needs. The main effect of fulfilment of needs on work engagement were jointly significant ($F(4,104) = 23.43, p < .01$), with an R^2 of .467. The analysis showed that fulfilment of the need for autonomy ($\beta = 0.24, t(111) = 2.76, p < .01$) and meaning ($\beta = 0.56, t(111) = 7.26, p < .01$) significantly predicted value of work engagement. Fulfilment of the need for competence ($\beta = -0.03, t(111) = -0.37, ns$) and relatedness ($\beta = 0.10, t(111) = 1.22, ns$) did not significantly predict work engagement. Therefore, *H6a* was partially supported.

Fulfilment of needs and work performance

A multiple linear regression was performed to predict work performance based on fulfilment of needs. The main effect of fulfilment of needs on work performance were jointly significant ($F(4,105) = 13.31, p < .01$), with an R^2 of .336. The analysis showed that fulfilment of the need for competence ($\beta = 0.16, t(109) = 3.93, p < .01$) and meaning ($\beta = 0.14, t(109) = 3.36, p < .01$) significantly predicted value of work performance. Fulfilment of the need for autonomy ($\beta = -0.01, t(109) = -0.28, ns$) and relatedness ($\beta = 0.11, t(109) = 1.21, ns$) did not significantly predict work performance. Hence, *H6b* was partially supported.

Mediating role of fulfilment of needs

H7a stated that the fulfilment of needs would mediate the relationship between the different aspects of job crafting and work engagement. In Table 4-8 the results of the PROCESS macro are reported (Hayes, 2013). Fulfilment of needs fully mediated the relationship between

crafting structural resources and work engagement ($b = 0.36, p < .01$). Fulfilment of needs partially mediated the relationship between cognitive job crafting and work engagement ($b = 0.29, p < .01$) and between crafting challenging demands and work engagement ($b = 0.30, p < .01$). Looking at the relationship between crafting hindering demands and work engagement, the indirect effect is significant in the absence of a significant total effect. This suggests that the indirect and direct associations between crafting hindering demands and work engagement cancel each other out. In addition, fulfilment of needs did not mediate the relationship between crafting social resources and work engagement. *H7a* was therefore, within the exception of crafting social job resources, supported.

H7b stated that the fulfilment of needs would mediate the relationship between the different aspects of job crafting and work performance. Fulfilment of needs partially mediated the relationship between cognitive job crafting and work performance ($b = 0.10, p < .05$), between crafting structural resources and work performance ($b = 0.15, p < .01$) and between crafting challenging demands and work performance ($b = 0.10, p < .05$). Looking at the relationship between crafting hindering demands and work performance, the indirect effect is significant in the absence of a significant total effect. Furthermore, fulfilment of needs did not mediate the relationship between crafting social resources and work performance. *H7b* was therefore, within the exception of crafting social job, supported.

Furthermore, as shown in Table 4, the significant indirect effect between cognitive job crafting and work engagement is explained by the significant indirect effect of fulfilment of the need for meaning ($b = 0.32, p < .01$). The significant indirect effect between cognitive job crafting and work performance is explained by the significant indirect effect of fulfilment of the need for competence ($b = 0.05, p < .05$).

In addition, the significant indirect effect between crafting structural resources and challenging demands and work engagement is explained by the significant indirect effect of fulfilment of the need for autonomy ($b = 0.08, p < .05$; $b = 0.06, p < .05$) meaning ($b = 0.30, p < .01$; $b = 0.24, p < .01$). The significant indirect effect between crafting structural resources and challenging demands and work performance is explained by the significant indirect effect of fulfilment of the need for competence ($b = 0.08, p < .05$; $b = 0.05, p < .05$) and meaning ($b = 0.05, p < .05$; $b = 0.04, p < .05$).

Concluding, the results showed that fulfilment of needs mediated the positive relationship between cognitive job crafting and work engagement and performance. Fulfilment of needs also mediated the positive relationship between crafting structural job

resources and work engagement and performance, and between crafting challenging job demands and work engagement and performance.

Table 4

Mediation of fulfilment of needs in the relationship between cognitive job crafting and work engagement and between cognitive job crafting and work performance.

	<i>b</i>	<i>SE</i>	95% <i>CI</i>
Total effect (c)	0.57**	0.15	[0.279,0.863]
Direct effect (c')	0.28*	0.13	[0.032,0.536]
Indirect effect (ab)	0.29**	0.11	[0.085,0.526]
Indirect effect – Need for autonomy (ab ₁)	-0.01	0.05	[-0.100,0.097]
Indirect effect – Need for competence (ab ₂)	-0.02	0.04	[-0.094,0.050]
Indirect effect – Need for relatedness (ab ₃)	-0.01	0.02	[-0.051,0.033]
Indirect effect – Need for meaning (ab ₄)	0.32**	0.09	[0.162,0.526]
Total effect (c)	0.23**	0.06	[0.112,0.350]
Direct effect (c')	0.14*	0.06	[0.022,0.249]
Indirect effect (ab)	0.10*	0.04	[0.020,0.190]
Indirect effect – Need for autonomy (ab ₁)	-0.00	0.01	[-0.014,0.017]
Indirect effect – Need for competence (ab ₂)	0.05*	0.02	[0.006,0.100]
Indirect effect – Need for relatedness (ab ₃)	-0.00	0.01	[-0.024,0.015]
Indirect effect – Need for meaning (ab ₄)	0.05	0.03	[-0.002,0.133]

Note. $N = 112$ (upper half of the table), $N = 110$ (lower half of the table). * $p = .05$, ** $p = .01$, R^2 Total = 0.120 (upper half of the table), R^2 Total = 0.121(lower half of the table)

Table 5

Mediation of fulfilment of needs in the relationship between crafting hindering demands and work engagement and between crafting hindering demands and work performance.

	<i>b</i>	<i>SE</i>	<i>95% CI</i>
Total effect (c)	-0.25	0.16	[-0.577,0.075]
Direct effect (c')	0.08	0.13	[-0.176,0.336]
Indirect effect (ab)	-0.33**	0.12	[-0.558,-0.099]
Indirect effect – Need for autonomy (ab ₁)	-0.05	0.05	[-0.163,0.016]
Indirect effect – Need for competence (ab ₂)	0.01	0.03	[-0.067,0.060]
Indirect effect – Need for relatedness (ab ₃)	-0.00	0.02	[-0.048,0.048]
Indirect effect – Need for meaning (ab ₄)	-0.29**	0.10	[-0.473,-0.091]
Total effect (c)	-0.01	0.07	[-0.143,0.125]
Direct effect (c')	0.09	0.06	[-0.021,0.210]
Indirect effect (ab)	-0.10*	0.05	[-0.187,-0.010]
Indirect effect – Need for autonomy (ab ₁)	0.00	0.01	[-0.019,0.025]
Indirect effect – Need for competence (ab ₂)	-0.04	0.03	[-0.109,0.017]
Indirect effect – Need for relatedness (ab ₃)	-0.00	0.01	[-0.022,0.022]
Indirect effect – Need for meaning (ab ₄)	-0.06*	0.03	[-0.113,-0.013]

Note. $N = 112$ (upper half of the table), $N = 110$ (lower half of the table). * $p = .05$, ** $p = .01$,

R^2 Total = 0.020 (upper half of the table), R^2 Total = 0.000 (lower half of the table)

Table 6

Mediation of fulfilment of needs in the relationship between crafting social resources and work engagement and between crafting social resources and work performance.

	<i>b</i>	<i>SE</i>	<i>95% CI</i>
Total effect (c)	0.07	0.13	[-0.200,0.332]
Direct effect (c')	0.11	0.11	[-0.104,0.317]
Indirect effect (ab)	-0.04	0.10	[-0.229,0.153]
Indirect effect – Need for autonomy (ab ₁)	-0.07	0.05	[-0.175,0.006]
Indirect effect – Need for competence (ab ₂)	0.00	0.02	[-0.039,0.047]
Indirect effect – Need for relatedness (ab ₃)	0.01	0.02	[-0.018,0.070]
Indirect effect – Need for meaning (ab ₄)	0.02	0.08	[-0.153,0.164]
Total effect (c)	-0.02	0.06	[-0.133,0.086]
Direct effect (c')	-0.02	0.05	[-0.112,0.081]
Indirect effect (ab)	-0.01	0.04	[-0.094,0.075]
Indirect effect – Need for autonomy (ab ₁)	0.00	0.01	[-0.020,0.037]
Indirect effect – Need for competence (ab ₂)	-0.03	0.02	[-0.079,0.012]
Indirect effect – Need for relatedness (ab ₃)	0.01	0.01	[-0.009,0.034]
Indirect effect – Need for meaning (ab ₄)	0.01	0.02	[-0.029,0.045]

Note. $N = 112$ (upper half of the table), $N = 110$ (lower half of the table). * $p = .05$, ** $p = .01$,
 R^2 Total = 0.002 (upper half of the table), R^2 Total = 0.002 (lower half of the table)

Table 7

Mediation of fulfilment of needs in the relationship between crafting structural resources and work engagement and between crafting structural resources and work performance.

	<i>b</i>	<i>SE</i>	<i>95% CI</i>
Total effect (c)	0.58**	0.13	[0.322,0.840]
Direct effect (c')	0.22	0.12	[-0.019,0.465]
Indirect effect (ab)	0.36**	0.09	[0.177,0.532]
Indirect effect – Need for autonomy (ab ₁)	0.08*	0.05	[0.003,0.205]
Indirect effect – Need for competence (ab ₂)	-0.05	0.07	[-0.193,0.078]
Indirect effect – Need for relatedness (ab ₃)	0.03	0.04	[-0.036,0.108]
Indirect effect – Need for meaning (ab ₄)	0.30**	0.07	[0.161,0.422]
Total effect (c)	0.27**	0.05	[0.168,0.373]
Direct effect (c')	0.12*	0.05	[0.016,0.233]
Indirect effect (ab)	0.15**	0.04	[0.078,0.232]
Indirect effect – Need for autonomy (ab ₁)	-0.00	0.01	[-0.036,0.025]
Indirect effect – Need for competence (ab ₂)	0.08*	0.03	[0.025,0.154]
Indirect effect – Need for relatedness (ab ₃)	0.01	0.02	[-0.018,0.051]
Indirect effect – Need for meaning (ab ₄)	0.05*	0.03	[0.007,0.132]

Note. *N* = 112 (upper half of the table), *N* = 110 (lower half of the table). **p* = .05, ** *p* = .01,

*R*² Total = 0.152 (upper half of the table), *R*² Total = 0,201(lower half of the table)

Table 8

Mediation of fulfilment of needs in the relationship between crafting challenging demands and work engagement and between crafting challenging demands and work performance.

	<i>b</i>	<i>SE</i>	<i>95% CI</i>
Total effect (c)	0.53**	0.11	[0.309,0.755]
Direct effect (c')	0.23*	0.10	[0.032,0.425]
Indirect effect (ab)	0.30**	0.08	[0.151,0.477]
Indirect effect – Need for autonomy (ab ₁)	0.06*	0.04	[0.002,0.170]
Indirect effect – Need for competence (ab ₂)	-0.02	0.04	[-0.118,0.051]
Indirect effect – Need for relatedness (ab ₃)	0.02	0.03	[-0.021,0.081]
Indirect effect – Need for meaning (ab ₄)	0.24**	0.07	[0.116,0.394]
Total effect (c)	0.21**	0.05	[0.119,0.301]
Direct effect (c')	0.11*	0.04	[0.019,0.196]
Indirect effect (ab)	0.10*	0.03	[0.049,0.167]
Indirect effect – Need for autonomy (ab ₁)	-0.00	0.01	[-0.026,0.022]
Indirect effect – Need for competence (ab ₂)	0.05*	0.02	[0.016,0.103]
Indirect effect – Need for relatedness (ab ₃)	0.01	0.01	[-0.014,0.038]
Indirect effect – Need for meaning (ab ₄)	0.04*	0.03	[0.004,0.101]

Note. *N* = 112 (upper half of the table), *N* = 110 (lower half of the table). **p* = .05, ** *p* = .01,

*R*² Total = 0.169 (upper half of the table), *R*² Total = 0,161(lower half of the table)

Discussion

The aim of the present study was to examine whether cognitive job crafting is related to work engagement and performance. Besides this, a second aim was to examine whether cognitive and behavioural job crafting may help employees to fulfil their psychological needs at work and, in turn, whether fulfilment of their psychological needs leads to work engagement and performance. By examining the mediating role of fulfilment of psychological needs, this study provides insight in the underlying mechanisms that play a role in the positive relationship between cognitive and behavioural job crafting and work engagement and performance. These associations were tested in a sample of 131 employees.

Job crafting and work engagement and performance

In line with the expectations and the literature, cognitive job crafting and crafting challenging job demands were positively associated with work engagement and performance. Crafting structural job demands was positively associated with work performance (Tims, Bakker & Derks, 2015). This shows us that cognitive job crafting, crafting structural job resources and crafting challenging job demands by employees has positive consequences for their work engagement and/or performance.

However, no relationship was found between crafting social job resources and work engagement and a negative relationship between crafting social job resources and work performance. This can be explained by the finding that crafting social job resources and asking for feedback from colleagues not only comes with positive feedback and support, but also with critics and negative feedback. Negative feedback does not always stimulate performance improvements, but often has the opposite effect (Kluger & DeNisi, 1996). Negative feedback is positively associated with negative affect (Ilies, de Pater & Judge, 2007), and negative affect, in turn, is negatively associated with work performance (Ferreira, da Costa Ferreira, Cooper & Oliveira, 2019). The questions about crafting social resources did not distinguish between positive or negative contacts and feedback.

Contrary to expectation, no relationship was found between crafting hindering job demands and work engagement and performance. The absence of significance could be explained by the mixed findings about this connection in the literature. The current study was based on findings that reducing hindering job demands was associated with decreased work engagement and performance (Brenninkmeijer & Hekkert-Koning, 2015), but there are studies that state that reducing hindering demands is associated with increased work engagement and performance (Tims & Bakker, 2010).

Job crafting and fulfilment of needs

Conform the expectations, cognitive job crafting was positively associated with fulfilment of the need for meaning. However, cognitive job crafting was negatively associated with fulfilment of the need for relatedness. If employees perceive their job as very meaningful and their colleagues do not, this might drive them apart. Although no research is done about this subject, so this is a suggestion for future research.

In line with existing literature, crafting structural resources was positively associated with fulfilment of the need for autonomy, competence and relatedness (Bakker & Oerlemans, 2019). Contrary to expectations, crafting social resources was negatively associated with fulfilment of the need for autonomy and competence. An explanation for this finding can be that asking for advice from others, might make employees feel they have to follow this advice and feel less autonomous or competent that they can do it on their own. Warner et al. (2011) found that participants with lower perceptions of autonomy received more support from their networks.

Crafting challenging demands did not predict the fulfilment of needs and crafting hindering demands was only negatively associated with fulfilment of the need for meaning. These dimensions might not have added value compared to the other predictors.

Fulfilment of psychological needs and work engagement and performance

In line with the expectations, fulfilment of psychological needs predicted work engagement and performance. However, work engagement was only predicted by fulfilment of the need for autonomy and meaning. In addition, work performance was only predicted by fulfilment of the need for competence and meaning. This means that fulfilment of the need for relatedness did not predict work engagement or performance. Fulfilment of the need for relatedness might not have added value compared to the other predictors.

Mediating role of fulfilment of psychological needs

It was expected that fulfilment of psychological needs would mediate the relationship between cognitive and behavioural job crafting and work engagement, and between cognitive and behavioural job crafting and performance. This expectation was confirmed for cognitive job crafting, crafting structural job resources and crafting challenging job demands. This

means that these forms of job crafting were positively associated with work engagement and performance via fulfilment of psychological needs.

When looking at the different mediating paths, the relationship between cognitive job crafting, crafting structural resources and challenging demands was mediated by fulfilment of the need for autonomy and meaning. The relationship between cognitive job crafting, crafting structural resources and challenging demands was mediated by fulfilment of the need for competence and meaning.

For crafting social job resources and hindering job demands, the expectation was not supported. Crafting social job resources and hindering job demands did not have a significant relationship with work engagement or performance, which is required for mediation.

Study limitations

The present study has several limitations. First, the data is conducted in a notable time. The corona-virus spread around the Netherlands which had a negative influence on the economy and on many company's within the Netherlands (CBS, 2020). The working condition for more than half of the sample group changed. Some could not work at all, but most of them were obligated to work from home. This means they were obligated to change factors of their job instead of crafting their job voluntarily. It is possible that this separation may not be clear and it may have influenced the results of the study. In this study there is not controlled for the influence of the corona-virus, so these factors must be taken into account when interpreting the results.

Secondly, this study had a cross-sectional design, which means no causal effects can be adopted in response to the results of this study. Because the exposure and outcome are simultaneously conducted, there is no evidence of a temporal relationship between job crafting and work engagement and performance (Solem, 2015). For instance, it might be possible that high performance causes more job crafting to happen, but it can also be the other way around. To find out the direction of the associations of the study variables, experimental or longitudinal data needs to be collected.

Lastly, more than three-quarters of the participants in this study were highly educated and one third of the participants held a managing position. Traditionally jobs were shaped by managers of a company (Grant, Fried, Parker & Frese, 2010). Therefore, Wrzesniewski and Dutton (2001) stated that managers and highly educated people were more likely to craft their jobs. Highly educated people are viewed as competent architects of a job and therefore more likely to meet this image. This means it might not be possible to generalise this study to the

entire population. For this reason, a suggestion for future research is to include lower educated individuals into the research sample.

Study implications

This study adds to the existing literature by providing more insight on the relatively new subject of cognitive job crafting and how cognitive job crafting is associated with work engagement and performance. The study pointed out fulfilment of psychological needs as one of the psychological mechanisms underlying the positive association between cognitive and behavioural job crafting and work engagement and performance. The results showed that fulfilment of psychological needs mediated this association.

Furthermore, this is the first study that added the need for meaning in researching the relationship between job crafting and the fulfilment of needs. The study pointed out the added value of fulfilment of the need for meaning in this relationship. The results showed that fulfilment of the need for meaning was associated with almost all dimensions of job crafting.

Based on the results of this study, implications for practice can be made. The results of this study show that crafting structural job resources and challenging job demands has a positive relationship with work engagement and performance. Therefore, organisations that are striving to improve the work engagement and performance of their employees would be advised to give their employees the space and knowledge to craft their jobs. Employees would especially benefit from the opportunity to craft structural job resources or challenging job demands. For instance, giving an employee the opportunity to take on an extra challenge would stimulate crafting challenging job demands. In addition, investing in trainings that clarify how to craft jobs correctly or letting the employees know they can start job crafting creates an open environment with the possibility for employees to craft their jobs.

However, the results of this study showed that not only the behavioural forms of job crafting, but also cognitive job crafting, are positively associated with work engagement and performance. Cognitive job crafting can be done individually without an open working environment. Changing the way employees perceive the tasks and relationships that comprise their job also increases their work engagement and performance. This means an open environment in which job crafting is possible is advised, but the absence of this environment does not have to stop an employee from cognitive job crafting.

Conclusion

This study provided insights in the relationship between cognitive and behavioural job crafting and work engagement and performance, and the mediation effects of fulfilment of psychological needs in this relationship. Based on the results it can be concluded that cognitive job crafting, crafting structural job resources and crafting challenging job demands are positively associated with fulfilment of psychological needs, work engagement and performance. Hence, organisations striving to improve the work engagement and performance of their employees are advised to give their employees knowledge about cognitive and behavioural job crafting and to create an open environment for their employees to do so. Concluding, in order to increase work engagement and performance, employees should proactively shape their ideal work environment and perceive it like that.

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Appendix 1. Briefing with information

Geachte deelnemer,

Hartelijk dank dat u (wederom) meewerkt aan het onderzoek naar job crafting! Het doel van huidig onderzoek is inzicht krijgen in de relatie tussen 'job crafting' (de manier waarop een individu zelf zijn/haar baan vormgeeft), uw visie over werk, bevlogenheid en prestatie. Ook zijn er een aantal vragen toegevoegd over hoe de Corona-situatie uw werk kan beïnvloeden.

Aan het begin van de vragenlijst worden een aantal achtergrondgegevens gevraagd. De overige vragen hebben betrekking op uw werk. Indien u op dit moment niet werkzaam bent, denk dan terug aan de functie die u voor het laatst uitgeoefend heeft. De informatie die u verstrekt, zal geheel anoniem en strikt vertrouwelijk behandeld worden. Dit betekent dat de resultaten alleen verwerkt worden door de Universiteit Utrecht en niet worden gekoppeld aan (uw inschrijving bij) Derks & Derks B.V.

Het invullen van de vragenlijst neemt ongeveer 10-15 minuten van uw tijd in beslag. Over uw antwoorden hoeft u niet lang na te denken, het gaat om uw eerste ingeving. Bovendien bestaan er geen goede of foute antwoorden. Voor de verwerking van de data is het van belang dat u alle vragen invult, daarom kunt u geen vragen overslaan. Verder is het goed om te weten dat u niet terug kunt naar een vorige pagina. Wanneer u de vragenlijst heeft ingevuld, is het voor de verwerking van antwoorden noodzakelijk deze te verzenden door op het zwarte pijltje te drukken.

Uiteraard is deelname geheel vrijblijvend en kunt u gedurende het onderzoek op elk moment stoppen. Uw gegevens worden dan niet verwerkt. Ook kunt u tot twee weken na het onderzoek nog aangeven dat uw data niet meer gebruikt mogen worden in het onderzoek. Wanneer u voor, tijdens of na het onderzoek vragen of suggesties heeft, kunt u mij bereiken via saskia@derksenderks.nl

Zodra u naar de volgende pagina gaat, stemt u in met deelname aan dit onderzoek en de daarbij behorende voorwaarden. U bevestigt dat:

- u goed bent ingelicht over de studie;
- u de mogelijkheid heeft (gehad) om vragen te stellen;

- u de mogelijkheid heeft gehad om na te denken of u wilde deelnemen;
- u vrijwillig meedoet;
- u toestemming geeft om uw data te gebruiken voor wetenschappelijk onderzoek;
- u zich bewust bent van de mogelijkheid om u op ieder moment terug te kunnen trekken uit het onderzoek.

Alvast hartelijk dank voor uw deelname!

Met vriendelijke groet,

Saskia Neuteboom

Masterstudente sociale, gezondheids- en organisatiepsychologie aan de Universiteit Utrecht
en stagiaire bij Derks & Derks B.V.

In samenwerking met:

dr. Veerle Brenninkmeijer (Onderzoeksbegeleidster Universiteit Utrecht)

drs. Jan Derks (Directeur Derks & Derks B.V.)

Appendix 2. Questionnaire

Persoonlijke code

Hieronder vraag ik u of u een persoonlijke code aan wilt maken. Met behulp van deze code kunnen we de antwoorden koppelen aan eventueel eerder gegeven antwoorden (indien u vorig jaar heeft meegewerkt aan het onderzoek) of bij eventueel vervolgonderzoek uw antwoorden koppelen. Op deze manier blijft uw anonimiteit gewaarborgd. Deze code wordt niet verbonden aan Derks & Derks en zal uitsluitend beheerd worden door de Universiteit Utrecht.

De persoonlijke code bestaat uit de 4 cijfers van uw geboortedag, de eerste letter van de voornaam van uw vader, gevolgd door de eerste letter van de voornaam van uw moeder. Voorbeeld: Is uw geboortedag 6 oktober, de voornaam van uw vader Bart en de voornaam van uw moeder Jara, dan wordt uw persoonlijke code dus: 0610BJ

Indien u ons wilt helpen door een persoonlijke code aan te maken en uw anonimiteit te waarborgen, vul deze dan hieronder in.

.....

Achtergrondgegevens

- | | |
|--|-----------------|
| 1. Wat is uw geslacht? | Man |
| | Vrouw |
| | Anders |
| 2. Wat is uw leeftijd? | |
| 3. Wat is uw hoogst afgeronde opleiding? | Lagere school |
| | MAVO, LBO, VMBO |
| | HAVO |
| | VWO |
| | MBO |
| | HBO |
| | WO |
| 4. Heeft u een leidinggevende functie? | Ja |
| | Nee |
| 5. Bent u zelfstandig ondernemer? | Ja |
| | Nee |

6. Voor hoeveel uur per week heeft u contractueel een
aanstelling?
7. Hoeveel uur werkt u daadwerkelijk?
8. Hoeveel jaar bent u werkzaam?
9. Hoeveel jaar bent u werkzaam in uw huidige functie?
10. In welke branche bent u momenteel werkzaam? Voedingsmiddelenindustrie
Farma, Biotechnische
Industrie
Gezondheidszorg
Medical devices, Labora-
toriumbenodigdheden
Overig
11. Tot welke functiegroep behoort uw functie? QA / Regulatory Affairs
Technisch
Sales, marketing
Medische expert
IT
HRM
Inkoop
Financiën
Administratief
Planning, logistiek
R&D
QC, laboratorium
Management, directie
Overig

Vragen over de corona-crisis

1. Werkt u verplicht thuis vanwege de corona-crisis? Ja
Nee, ik werkte al thuis
Nee, ik werk nog op locatie
Anders, namelijk
2. Hoe beïnvloed de corona-crisis u persoonlijk?
a. Het belemmert mij in mijn prestaties in mijn werk.
b. Het beperkt mijn mogelijkheden wat betreft mijn werk.

- c. Het beperkt me in hoe goed ik mijn werk kan uitvoeren.
- d. Het belemmert me met het leren omgaan met de moeilijke aspecten van het werk.
- e. Het laat zien dat ik veel nieuwe dingen kan leren over mijn werk.
- f. Het laat me zien dat ik zaken in mijn werk anders kan aanpakken dan ik normaal gesproken doe.
- g. Het houdt me gefocust om het goede te doen voor mijn werk

Antwoordschalen: 1 = helemaal mee oneens, 2 = mee oneens, 3 = niet mee oneens, niet mee eens, 4 = mee eens, 5 = helemaal mee eens

3. De Corona-crisis beïnvloedt het welzijn voor iedereen verschillend. Mocht je nog een toelichting willen geven over waarom de situatie u meer of minder beïnvloedt of aangrijpt, kunt u dit hieronder toelichten.

.....

Cognitive job crafting

De volgende uitspraken gaan over uw gedrag op het werk. Kies bij iedere stelling het antwoord dat op u het meest van toepassing is.

1. Ik denk na over hoe mijn werk doel en betekenis geeft aan mijn leven.
2. Ik herinner mijzelf aan de betekenis van mijn werk voor het succes van de organisatie.
3. Ik herinner mijzelf aan het belang van mijn werk voor de maatschappij.
4. Ik denk na over de manier waarop mijn werk een positieve invloed heeft op mijn leven.
5. Ik denk na over de rol die mijn werk speelt in mijn algehele welzijn.
6. Ik denk na over de doelen die ik met mijn werk wil bereiken.
7. Ik ben me bewust van de betekenis van mijn werk.
8. Ik zie het nut van mijn werktaken.
9. Ik denk na over hoe mijn werktaken ook kunnen bijdragen aan mijn persoonlijke lange termijn doelen.
10. Ik denk na over hoe mijn werk bijdraagt aan de organisatie als geheel.
11. Ik heb geprobeerd te veranderen hoe ik tegen mijn werk aankijk.
12. Ik heb geprobeerd nieuwe doelen te stellen in mijn werk.

Antwoordschalen: 1 = nooit, 2 = soms, 3 = regelmatig, 4 = vaak, 5 = heel vaak

Job crafting

De volgende uitspraken gaan over uw gedrag op werk. Kies bij iedere stelling het antwoord dat op u het meest van toepassing is.

1. Ik zorg ervoor dat ik mijn capaciteiten optimaal benut.
2. Ik zorg ervoor dat ik niet teveel hoef om te gaan met personen wier problemen mij emotioneel raken.
3. Ik vraag collega's om advies.
4. Ik probeer mezelf bij te scholen.
5. Als er nieuwe ontwikkelingen zijn, sta ik vooraan om ze te horen en uit te proberen.
6. Ik vraag of mijn leidinggevende tevreden is over mijn werk.
7. Ik zorg ervoor dat ik zelf kan beslissen hoe ik iets doe.
8. Ik zorg ervoor dat ik minder moeilijke beslissingen in mijn werk hoef te nemen.
9. Ik probeer nieuwe dingen te leren op mijn werk.
10. Ik vraag anderen om feedback over mijn functioneren.
11. Ik zorg ervoor dat ik minder emotioneel inspannend werk moet verrichten.
12. Ik zoek inspiratie bij mijn leidinggevende.
13. Ik probeer mezelf te ontwikkelen.
14. Ik neem geregeld extra taken op me hoewel ik daar geen extra salaris voor ontvang.
15. Ik zorg ervoor dat ik niet teveel hoef om te gaan met mensen die onrealistische verwachtingen hebben.
16. Als het rustig is op mijn werk, zie ik dat als een kans om nieuwe projecten op te starten.
17. Ik vraag mijn leidinggevende om mij te coachen.
18. Ik zorg ervoor dat ik minder geestelijk inspannend werk hoef te verrichten.
19. Ik probeer mijn werk wat zwaarder te maken door de onderliggende verbanden van mijn werkzaamheden in kaart te brengen.
20. Als er een interessant project voorbij komt, bied ik mezelf proactief aan als projectmedewerker.
21. Ik zorg ervoor dat ik me niet lange tijd achter elkaar hoef te concentreren.

Antwoordschalen: 1= nooit, 2= soms, 3= regelmatig, 4= vaak, 5= heel vaak

Fulfilment of psychological needs

De volgende vragen gaan over jouw visie op je werk. Kies bij iedere stelling het voor u best passende antwoord.

1. Op mijn werk heb ik vaak het gevoel dat ik moet doen wat anderen mij bevelen.
2. Ik voel me vrij mijn werk te doen zoals ik denk dat het goed is.
3. Als ik mocht kiezen, dan zou ik mijn werk anders aanpakken.
4. Op mijn werk voel ik me gedwongen dingen te doen die ik niet wil doen.
5. Mijn taken op het werk stemmen overeen met wat ik echt wil doen.
6. Ik heb het gevoel dat ik mezelf kan zijn in mijn baan.
7. Ik heb het gevoel dat ik ook de moeilijke taken op mijn werk tot een goed einde kan brengen.
8. Ik heb de taken op mijn werk goed onder de knie.
9. Ik twijfel eraan of ik mijn werk goed kan uitvoeren.
10. Ik voel me bekwaam in mijn werk.
11. Ik voel me niet echt competent in mijn baan.
12. Ik ben goed in mijn baan.
13. Ik voel me een deel van een groep op het werk.
14. De mensen op mijn werk zijn echte vrienden.
15. Ik ga niet echt met de andere mensen op mijn werk om.
16. Ik voel me vaak alleen als we onder collega's zijn.
17. Ik kan met anderen op het werk praten over wat ik echt belangrijk vind.
18. Ik voel niet echt een band met de andere mensen op mijn werk.
19. Mijn werk heeft veel betekenis voor me.
20. Mijn werk is nuttig voor andere mensen.
21. Met mijn werk draag ik bij aan iets belangrijks.
22. Mijn werk is een belangrijk onderdeel van mijn leven.

Antwoordschalen: 1 = helemaal mee oneens, 2 = mee oneens, 3 = beetje mee oneens, 4 = niet eens, niet oneens, 5 = beetje mee eens, 6 = mee eens, 7 = helemaal mee eens

Work engagement

De volgende uitspraken hebben betrekking op hoe u uw werk beleeft en hoe u zich daarbij voelt. Wilt u aangeven hoe vaak iedere uitspraak op u van toepassing is door steeds het best passende antwoord in te vullen?

1. Op mijn werk bruis ik van energie
2. Ik vind het werk dat ik doe nuttig en zinvol.
3. Als ik aan het werk ben, dan vliegt de tijd voorbij.
4. Als ik werk, voel ik me fit en sterk.
5. Ik ben enthousiast over mijn baan.
6. Als ik werk vergeet ik alle andere dingen om mij heen.
7. Mijn werk inspireert mij.
8. Als ik 's morgens opsta, heb ik zin om aan het werk te gaan.
9. Wanneer ik intensief aan het werk ben, voel ik mij gelukkig.
10. Ik ben trots op het werk dat ik doe.
11. Ik ga helemaal op in mijn werk.
12. Als ik aan het werk ben, dan kan ik heel lang doorgaan.
13. Mijn werk is voor mij een uitdaging.
14. Mijn werk brengt mij in vervoering.
15. Op mijn werk beschik ik over een grote mentale (geestelijke) veerkracht.
16. Ik kan me moeilijk van mijn werk losmaken.
17. Op mijn werk zet ik altijd door, ook als het tegenzit.

Antwoordschalen: 1 = nooit, 2 = sporadisch (een paar keer per jaar of minder), 3 = af en toe (eens per maand of minder), 4 = regelmatig (een paar keer per maand), 5 = dikwijls (eens per week), 6 = zeer dikwijls (een paar keer per week), 7 = altijd (dagelijks)

Work performance

De volgende vragen gaan over hoe u op het werk functioneert. Kies bij elke uitspraak het voor u best passende antwoord.

1. U helpt collega's met hun werk als zij terugkeren van een periode van afwezigheid.
2. U behaalt de doelen van uw functie.
3. U biedt vrijwillig aan om dingen te doen die formeel gezien niet vereist worden door de functie die u bekleedt.
4. U voldoet aan de normen voor goede prestaties.

5. U neemt initiatief om nieuwe medewerkers wegwijs te maken, hoewel dit formeel gezien geen onderdeel van uw functie is.
6. U laat zien een deskundige te zijn op alle onderdelen van uw werkzaamheden.
7. U helpt collega's die kampen met een hoge werkdruk of die andere problemen hebben.
8. U vervult alle eisen die uw functie aan u stelt.
9. U helpt uw collega's bij de uitvoering van hun werkzaamheden.
10. U kunt meer aan dan er van u gevraagd wordt.
11. U doet goede suggesties om de algehele kwaliteit van de afdeling/de organisatie te verbeteren.
12. U lijkt geschikt voor een hogere positie.
13. U bent bereid om dingen te doen die niet door de organisatie worden geëist, maar die goed zijn voor het imago van de organisatie.
14. U bent competent op alle terreinen van uw functie.
15. U presteert goed in uw functie doordat u de taken naar verwachting uitvoert.
16. Ik organiseer en plan het werk om doelen te realiseren en deadlines te halen.

Antwoordschalen: 1= helemaal mee oneens, 2= mee oneens, 3= mee eens, 4= helemaal mee eens

Burnout

De volgende uitspraken hebben betrekking op hoe u uw werk beleeft en hoe u zich daarbij voelt. Wilt u aangeven hoe vaak iedere uitspraak op u van toepassing is door steeds het best passende antwoord aan te kruisen.

1. Op het werk voel ik me geestelijk uitgeput.
2. Alles wat ik doe op mijn werk, kost mij moeite.
3. Op het werk voel ik me lichamelijk uitgeput.
4. Ik raak maar niet uitgerust nadat ik gewerkt heb.
5. Als ik 's morgens opsta, mis ik de energie om aan de werkdag te beginnen.
6. Ik wil wel actief zijn op het werk, maar het lukt mij niet.
7. Als ik me inspan op het werk, dan word ik snel moe.
8. Op het einde van de werkdag voel ik me mentaal uitgeput en leeg.
9. Ik kan geen belangstelling en enthousiasme opbrengen voor mijn werk.
10. Op mijn werk denk ik niet veel na en werk ik op de automatische piloot.
11. Ik voel een sterke weerzin tegen mijn werk.

12. Mijn werk laat mij onverschillig.
13. Ik ben cynisch over wat mijn werk voor anderen betekent.
14. Op het werk kan ik mijn aandacht er moeilijk bijhouden.
15. Tijdens mijn werk heb ik moeite om helder na te denken.
16. Ik ben vergeetachtig en verstrooid tijdens mijn werk.
17. Als ik aan het werk ben, kan ik mij moeilijk concentreren.
18. Ik maak fouten in mijn werk, omdat ik er met mijn hoofd 'niet goed bij ben'.
19. Op mijn werk heb ik het gevoel geen controle te hebben over mijn emoties.
20. Ik herken mijzelf niet in de wijze waarop ik emotioneel reageer op mijn werk.
21. Tijdens mijn werk raak ik snel geïrriteerd als de dingen niet lopen zoals ik dat wil.
22. Ik word kwaad of verdrietig op mijn werk zonder goed te weten waarom.
23. Op mijn werk kan ik onbedoeld te sterk emotioneel reageren.
24. Ik heb problemen met inslapen of doorslapen.
25. Ik heb de neiging om te piekeren.
26. Ik voel mij opgejaagd en gespannen.
27. Ik voel me angstig en/of ik heb last van paniekaanvallen.
28. Ik heb moeite met drukte en/of lawaai.
29. Ik heb last van hartkloppingen of pijn in de borststreek.
30. Ik heb last van maag- en/of darmklachten.
31. Ik heb last van hoofdpijn.
32. Ik heb last van pijnlijke spieren, bijvoorbeeld in de nek, schouder of rug.
33. Ik word snel ziek.

Antwoordschalen: 1 = nooit, 2 = zelden, 3 = soms, 4 = vaak, 5 = altijd

Appendix 3. Work related descriptives of the research participants

Table 9

Educational level, branches of work and function group of the research participants.

Category	Options	% Of participants
Educational Level	MAVO, LBO, VMBO	1.5
	HAVO	1.5
	VWO	6.9
	MBO	8.4
	HBO	33.6
	WO	48.1
Branches	Food industry	6.9
	Pharmaceutics/biotechnology	22.9
	Industry	3.8
	Health care	19.1
	Medical devices/laboratorial supplies	3.1
	Other	44.3
Function group	QA/Regulatory Affairs	9.2
	Sales/marketing	13.0
	Medical expert	3.8
	IT	3.8
	HRM	17.6
	Purchase	1.5
	Finance	0.8
	Administrative	2.3
	Planning/logistics	0.8
	Research and development	2.3
	QC/laboratories	1.5
	Management/board	15.3
	Other	28.2

N = 131.

Appendix 4. Correlations between all variables

Table 10

Correlations between all variables.

	1	2	3	4	5	6	7	8	9	10	11	12
Cognitive job crafting (1)	-	.15	.48**	.31**	.39**	-.02	.21*	-.03	.39**	.39**	.35**	.07
Crafting hindering demands (2)		-	.20*	-.00	.00	-.13	-.16	-.01	-.29*	-.14	-.01	.23*
Crafting social resources (3)			-	.29**	.26**	-.20*	-.13	.11	.02	.05	-.04	.13
Crafting structural resources (4)				-	.59**	.24*	.46**	.28**	.38**	.39**	.45**	-.16
Crafting challenging demands (5)					-	.22*	.31**	.22*	.36**	.41**	.40**	-.18
Need for autonomy (6)						-	.43**	.46**	.28**	.42**	.25**	-.65**
Need for competence (7)							-	.36**	.39**	.32**	.51**	-.53**
Need for relatedness (8)								-	.13	.27**	.27**	-.41**
Need for meaning (9)									-	.63**	.44**	-.12
Work engagement (10)										-	.47**	-.26**
Work performance (11)											-	-.14
Burnout (12)												-

Note. * $p = .05$, ** $p = .01$

