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How task, relational and cognitive crafting relate to job performance: a weekly diary study on the role of meaningfulness

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ABSTRACT

Job crafting has gained prominence in research and organizational practice as an important work behaviour that can cultivate positive workplace outcomes. The present study uses job crafting theory to argue that experienced meaningfulness plays a mediating role in the link between task, cognitive and relational crafting behaviours and peer-ratings of job performance over time. Additionally, this study validates the weekly version of the Job Crafting Questionnaire (JCQ). A total of 134 employees participated in a weekly diary study over the course of three weeks ($N = 402$ observations). Results of multilevel confirmatory factor analyses showed that the JCQ has a three-factor structure, and differentiates between task, cognitive and relational crafting. Consistent with predictions, cognitive crafting indirectly influenced both peer-rated in-role and extra-role performance through meaningfulness, while task crafting had a partial indirect relationship with peer-rated in-role performance. We also found that relational crafting significantly predicted peer-rated extra-role performance. In addition, crafting in previous weeks increased meaningfulness and job performance in subsequent weeks. We conclude that job crafting is an important means for improving individual and organizational outcomes and that cognitive crafting specifically is an important workplace behaviour in achieving meaningfulness at work.

Since work environments are constantly changing, it is important for employees to take personal initiative in order to perform well. For example, information technology is rapidly expanding, forcing organizations to adapt quickly (cf. Grant & Ashford, 2008), while expecting employees to be proactive and more flexible in their work role (Grant et al., 2009; Miraglia et al., 2017). Employees who proactively adjust and craft their work, experience more meaning and adapt better to changing circumstances; they are also more innovative and perform better in their overall work role and participate more actively in their work by seeking challenges and having control over what they do (Bindl & Parker, 2011; Grant et al., 2009; Petrou et al., 2018).

Job crafting is a critical path to meaningfulness in changing work environments, while it also leads to an engaged and satisfied workforce (Berg et al., 2010). Past research mainly focusses on job crafting as a general behaviour where employees craft their job characteristics, often showing the benefits of crafting the physical and relational aspects (e.g., the actual tasks and social aspects) of work (Tims et al., 2012). Although this conceptualization benefits most work settings (Petrou et al., 2012; Tims et al., 2012), Slemp and Vella-Brodrick (2013) point out that there is a need to investigate how people craft the cognitive aspects of their work as well. This is crucial to better performance because, for example, changing the work content and context is not always an option in all work environments.

Recent research pointed out that cognitive crafting helps employees deal with difficult situations (Buonocore et al., 2020), while cognitive crafting is beneficial for innovation

performance, in conjunction with task, relational and skills crafting (Bindl et al., 2019). Wrzesniewski and Dutton (2001) have argued theoretically that people craft the task, cognitive and relational boundaries of their jobs because of what motivates them and to foster meaningfulness. The present study puts this contention to the test and uniquely contributes by investigating whether employees experience more meaningfulness and perform better in their jobs during the *weeks* they proactively engage in physical, relational *and* psychological (e.g., cognitive) job crafting strategies.

This study makes the following specific contributions to the literature. Wrzesniewski and Dutton distinguish between crafting of physical aspects of the job and changing personal perceptions about one's work – and we investigate this theoretical assumption by specifically investigating how *task, cognitive* and *relational* crafting relates to *meaningfulness* over time, while establishing whether meaningfulness is a mediator of the relationship between job crafting and employee outcomes on a week-level. Further, although research has confirmed there is a relationship between job crafting and job performance (Miraglia et al., 2017; Tims et al., 2015), we show how task, cognitive and relational crafting specifically are related to *other-ratings* of in-role and extra-role performance through meaningfulness – at the week-level. Moreover, while physical and relational job crafting behaviours (e.g., task and relational crafting) are often-studied job crafting strategies of increasing job challenges, increasing job resources and increasing social resources (Lichtenthaler & Fischbach, 2019; Rudolph et al., 2017), little is known about the impact of cognitive crafting in

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conjunction with psychical and relational job crafting behaviours, even more so, over time (e.g., week-level). Additionally, we also validate the Job Crafting Questionnaire (JCQ) that was developed by Slemp and Vella-Brodrick (2013), whom provides evidence for a three-factor model, distinguishing between task, cognitive and relational crafting – as originally proposed by Wrzesniewski and Dutton (2001) and we show how these types of crafting behaviours fluctuate over time (i.e. weeks).

Theoretical background

Job crafting refers to the changes employees make in the task, cognitive and relational components of their jobs in order to cultivate optimal work experiences and improve their well-being (Slemp & Vella-Brodrick, 2013; Wrzesniewski & Dutton, 2001). Specifically, 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 Theory (JCT) posits that people who engage in crafting activities increase the meaningfulness of their work and people will further engage in job crafting activities to a) satisfy their need for control, b) to maintain a good self-image, and c) to connect with others (Wrzesniewski & Dutton, 2001).

Traditionally – and the basis on which the Job Crafting Theory is built – jobs consist of a variety of tasks that contribute to work as a whole and the way in which these tasks are designed, can be altered (Hackman & Oldham, 1975). It combines several aspects which enables employees to experience their work more favourably. For example, when work is made up of different but related tasks (variety), provide opportunities in which employees feel they achieve something (significance) and have opportunities in which an employee see themselves in that role (identity) (see Berg et al., 2013; Hackman & Oldham, 1975), it is likely that employees will be more efficient in their work role. The way jobs are designed allows for it to be rearranged to overcome disengagement or dissatisfaction (see Armstrong, 2009), while job crafting allows employees to actively participate in the designs of their jobs by changing their job boundaries to align with individual needs and employee self-image, while also achieving the organizational goals.

Task crafting refers to the changes employees make to either the type or amount of work they do (Slemp & Vella-Brodrick, 2013, 2014). This implies that employees take the personal initiative to change the exact tasks that they carry out (e.g., do different tasks), change the way they work (e.g., change their work process), and/or change the timing of their tasks (e.g., completing complex tasks in the morning when they have high energy levels, while completing routine tasks in the afternoon when they have less energy or by working flexible hours). By exerting control over one's work experiences, employees make their work their own. Controlling one's work is especially important as it also minimizes negative feelings (e.g., alienation) that employees may have towards their work (Rodgers, 1995), while it is also evident that if employees optimize the resources in their jobs, they will improve their overall well-being and perform better (Bakker & Demerouti, 2017).

Cognitive crafting refers to the way an employee makes changes to their perception about their job to attach more meaning to their work (Slemp & Vella-Brodrick, 2013). Cognitive crafting enables employees to continuously re-evaluate how work influences them personally by changing the way they think about it (Slemp & Vella-Brodrick, 2013; Wrzesniewski & Dutton, 2001), while also continuously examining how connected they are with their work. Wrzesniewski and Dutton (2001) introduced cognitive crafting as a psychological dimension where employees can change the boundaries of their work without changing the work itself. In this process, employees change their attitude, perception and the way they think about their work to make work more satisfying. Cognitive crafting further allows employees to (re-)consider personal observations in relation to work and evaluating whether it aligns with their purpose in life. This ensures that employees can create their own meaning at work by linking personal ideals and passions with a work goal (see Wrzesniewski & Dutton, 2001), permitting an employee to feel that they can make a difference.

Relational crafting refers to the control employees have over the people at work they interact with (Slemp & Vella-Brodrick, 2013, 2014). Employees may actively choose to what extent and how they work with and approach different colleagues (e.g., working with difficult colleagues differently as compared to supportive colleagues), and to what extent they get involved in social activities (e.g., welcoming new employees or attending work parties). Employees participate in crafting to satisfy their need to connect and build social relationships with others (Wrzesniewski & Dutton, 2001).

Weekly job crafting and psychological meaningfulness

With changing work environments, employees cannot constantly rely on organizations to create workspaces that suit unique individual needs. In the present study, we propose that people can use physical, psychological and relational job crafting strategies very strategically in order to create meaning, increase well-being, help others and make a difference at and through work – on a weekly basis.

Meaningful work is defined in different ways (cf. Csikszentmihalyi, 1990; Steger et al., 2009); what is most important though, is that meaningfulness determines the psychological well-being of people (see Frankl, 1984). *Meaningfulness* is an important facet of defining meaning *in* and *at* work and is explained as " … the value of a work goal or purpose, judged in relation to an individual's own ideals or standards" (May et al., 2004, p. 14). Meaningfulness further refers to the degree of significance and purposes an employee believes their work has (Berg et al., 2013). Bailey et al. (2018) as well as Lichtenthaler and Fischbach (2019) confirm that job crafting is an effective way to foster meaningful work, while research suggests that different types of job crafting are necessary to make work meaningful (Berg et al., 2013; Slemp & Vella-Brodrick, 2013).

As previously mentioned, Job Crafting Theory posits that the path to meaningfulness at work is determined by the control employees exert over their work (task crafting), how they perceive their work in terms its purpose (cognitive crafting) and

how employees relate to others (relational crafting) (Wrzesniewski & Dutton, 2001), confirming that different types of job crafting is can lead to experienced meaningfulness.

Changing physical work tasks helps improve the fit between one's preferred way of working and the job. Task crafting provides the opportunity for employees to make the necessary changes to their physical work boundaries that can suit personal needs. It is expected that employees will change their task boundaries to ensure that work makes sense, fits with individual strengths and that their work allows for more variety and use of skills (see Hackman & Oldham, 1975). We can, therefore, expect that employees will experience more meaningfulness in their work roles because they exert control over their work (see Wrzesniewski & Dutton, 2001). A degree of worth is attached to work tasks when an employee spends the time altering and improving work tasks. Because the job itself can motivate employees and provide them with opportunities of experienced significance in the task (see Hackman & Oldham, 1975), employees will likely find their work meaningful when they spend time changing the physical boundaries of their work.

Since people are constantly in pursuit of meaning and well-being (Frankl, 1984), it is likely that employees will specifically spend time changing the psychological boundaries of work to align their self-concept with their work. By realizing work can have purpose, employees may inherently experience their work as meaningful. Although cognitive crafting and meaningfulness may share some theoretical overlap, meaningfulness relates to the perception employees have about their work, while cognitive crafting is the process in which employees actively make changes to those perceptions (see Berg et al., 2013). Because cognitive crafting is an active psychological process of shifting perceptions of work, employees may for example, imagine and consider how their work affects the lives of others or how it affects the organizational outcomes and visualize ways in which they can improve their mindset about their work and craft a positive work mindset that is aligned with their self-image in order to make their work more meaningful.

Cognitive crafting is, therefore, an important way in which employees can have personal control of their work cognitions (Slemp & Vella-Brodrick, 2013), and employees can continuously adapt their perception and attitude towards work to ensure that their work has a positive influence (e.g., purpose and well-being) in their own lives in general and in the lives of others. Maintaining a positive self-image leads to employees feeling confident when conducting their tasks at work and helps employees develop a positive social identity at work (Wrzesniewski & Dutton, 2001). In this psychological process of crafting our perceptions about work, cognitive crafting will inherently increase meaningfulness of work since employees have the control over what make them feel content at work. Limited research is available on the psychological process of job crafting (e.g., cognitive crafting) in general (Bindl et al., 2019) and more so over time.

Further, Wrzesniewski and Dutton (2001) point out a need for connection often contributes towards meaningfulness. Ultimately, if employees can have control over which relationships to foster and how they choose to build those relationships, their need for connection is satisfied, but such that they

can also have an optimal work experience, which improves meaning over time. By increasing the time spent with supportive and valued colleagues, employees satisfy their basic need for relatedness, which gives important meaning to the work life and help build good working relationships. It is also possible that employees will choose to withdraw from relational crafting activities to help improve job fit as a self-driven strategy (see Rofcanin et al., 2018), enabling employees to manage difficult relationships and foster supportive one's in the process. Subsequently, during weeks in which employees craft their relationships and spend time with valued colleagues, they may experience more meaningfulness at work.

As the process of job crafting and experienced meaningfulness is continuous (Berg et al., 2013), we therfore expect that this relationship takes place over time. We put forth the following hypothesis:

Hypothesis 1: Weekly a) task, b) cognitive, and c) relational crafting positively relates to weekly meaningfulness.

Weekly job crafting, meaningfulness and performance

Job crafting behaviour and meaningfulness cultivate high performing employees (Grant et al., 2009; Rosso et al., 2010; Weseler & Niessen, 2016) and employees who craft their work continuously during work weeks are thus likely to perform better, because the facilitated meaning through altering their jobs. The dynamic of this mentioned relationship is crucial because experienced meaningfulness as a result of changing work boundaries will lead to employees placing a higher value in their work (Steger et al., 2012), which is important in achieving overall work goals, improving job fit and performing well. If employees perform well at work in both in-role (investment in their own work role) and extra-role (investment in assisting colleagues with completing their tasks) performance behaviours (see Halbesleben & Wheeler, 2008; Williams & Anderson, 1991), they help reach the overall organizational goal (Campbell, 1990), which is critical for the relevancy of an organization.

One of the conditions to better performance is when people believe that their work is making a difference in other's lives (Hackman & Oldham, 1976). Improved job performance can thus happen as a result of aligning personal identity with work, making work tasks more personalized and developing relationships with colleagues according to what gives employees meaning in their personal lives (cf. Wrzesniewski & Dutton, 2001). Experiencing meaningfulness at work further allows employees to perform better because they can be "themselves" in their work role to accomplish task-significance (cf. Allan et al., 2018), and being more authentic at work aligns more closely with personal life goals. Research suggests that employees will be more motivated and willing to perform at work because they can satisfy work needs through job crafting (cf. Bailey et al., 2018; Lichtenthaler & Fischbach, 2019).

Furthermore, personal judgements of the individual work role and an employee's attempt in making changes to their work roles are more effectively evaluated if employee performance is rated by a peer or manager he or she works closely

with. Because of the likelihood that employees may over- or under-estimate their own performance, we have a better understanding of how proactive workplace behaviours will relate to employee performance if we use alternative ratings of performance (cf. Tims et al., 2012). Colleagues can assist and encourage employees better in achieving personal work goals and personal crafting initiatives if they provide feedback based on the peer ratings of performance of another employee. We speculate that job crafting and meaningfulness will positively influence peer-rated job performance because we expect that employees whom constantly assess and craft how their work create meaningful experiences, will also put in the effort to be viewed by their peers as good performers. We therefore put forth the following hypotheses:

Hypothesis 2: Weekly a) task, b) cognitive and c) relational crafting are positively related to weekly peer-rated in-role performance, through weekly psychological meaningfulness.

Hypothesis 3: Weekly a) task, b) cognitive and c) relational crafting are positively related to weekly peer-rated extra-role performance, through weekly psychological meaningfulness.

Method

Procedure and participants

We used a multilevel, weekly diary design (Muthen & Muthen, 1994; Steele, 2008). Participants were recruited by post-graduate students with the researchers coordinating the research process. A letter containing information about the study, such as the confidential nature of the study, the instructions of how to complete the survey (every Friday for three weeks), and necessary contact details, accompanied the surveys. Each survey was clearly marked in terms of what needed to be completed for each week. Regarding the peer-rating of performance, participants identified a direct co-worker to complete the performance rating of each participant. The specific measure was sent to each of the identified co-worker and numbered in accordance with the participant that identified them. The students distributed one survey per week to their targeted participants, collected the survey after completion, and captured the data.

We targeted a non-probability sample of 150 employees in South Africa and received $n = 134$ completed surveys (response rate of 89%), resulting in 402 occasions. Although we wanted a sample that consisted of employees in various types of work and organizations, participants had to be in current employment for a minimum of 1 year to ensure that they have had opportunities to perform well in their jobs, have a sufficient command of English and complete the survey on Fridays for three weeks. It is proposed that job crafting, and meaningfulness is likely to be a continuous process (see Berg et al., 2013) and takes place over longer periods than a day (e.g., weekly). Diary methods have become an important method to help us understand behaviour at work (Ohly et al., 2010) and consequently, we opted for the diary method to help us understand job crafting, meaningfulness and performance over time.

Guided by previous studies on week-level designs, where week-level data collection ranged between 3 and 5 weeks (see Bakker & Bal, 2010; Bakker & Sanz-Vergel, 2013) and considering the burden on the participant because it has a short interval between occasions (Iida et al., 2012), we opted for a three-week data point to improve commitment to responding to the questionnaires. Iida et al. (2012) further point out that the time points (how many times) in psychological phenomena vary and is still largely unknown because behavioural states are momentary and subjective.

The sample consisted of 54 male employees (41.2%), while 77 female employees (58,8%) in current employment. Fifty-one participants were single (38.9%), 29 were engaged/in relationship (22.1%) and 48 were married (36.6%). Most of the participants were African (83; 63.4%), while 24 were Caucasian (18.3%), 15 were mixed race (11.5%), and 7 were Indian (5.3%). Most participants spoke an African home language, 77 (58.2%), while 42 participants were English speaking (32.1%), and 11 spoke Afrikaans (8.4%). All participants (100%) were full-time employed.

Most employees had a Bachelor's degree n = 60 (45.8%), while 37 employees had no higher education degree (28.2%); 34 employees had a post graduate degree (26%); 20 (15.3%) employees were interns or early career employees. Regarding job level, 14 (11.6%) employees were in senior management, 46 (35.1%) were in lower/middle management positions. People whom had no managerial positions were divided into two groups, namely 29 (22.1%) holding high-level positions, but not managing, while 21 (16%) indicated that they had professional roles (e.g., psychologist). Types of organizations included banks and financial institutions (28.5%), medical centres (18.4%), engineering companies (15.4%), and service industries (12.8%).

Weekly measures

All the measures were rated on a seven-point response format, rated from 1 (totally disagree) to 7 (totally agree). The items of all the measures were adapted so it could be measured every Friday over a three-week period All items were adapted to account for week-level variance (by adding "This week . . . ").

The fifteen-item *Job Crafting* Questionnaire (JCQ) (Slemp & Vella-Brodrick, 2013) measures task crafting, cognitive crafting and relational crafting. Example items include, "This week, . . . " "I introduced new approaches to improve my work", "I thought about how my job gives my life meaning and purpose" and "I made an effort to get to know people well at work", respectively. The (average) internal consistency with which the items measured job crafting over the three-week period was.86 for task crafting, .91 for cognitive crafting, and .86 for relational crafting.

The six-item *Psychological Meaningfulness* Scale (PMS) (Spreitzer, 1995) was used to measure the meaningfulness of work. An example item is "This week, the work I did on this job was very important to me". The reliabilities of meaningfulness ranged between .94 and .95 over the three-week period.

The *Job Performance* Scale (Goodman & Svyantek, 1999) was used to measure in-role and extra-role performance. A peer rating of the participant's performance was measured. An

example item for in-role performance is, "This week, my colleague met all the requirements of the position." An example for extra-role performance is, "This week, my colleague helped other colleagues who were under high work pressure or who had other problems." The reliability coefficients ranged between .89 and .90 over the three weeks for in-role performance and ranged between .74 and 86 for extra-role performance.

Statistical analysis

The statistical analysis was conducted using the Mplus 8.2 programme (Muthen & Muthen, 1994) and the Rstudio programme, specifically the nlme (Pinheiro et al., 2020), the lme4 (Bates, 2018) and the mediate packages (Tingley et al., 2014). First, we conducted a Multilevel Confirmatory Factor Analysis (MCFA) to obtain the factor structure of the Job Crafting Questionnaire. MCFA splits the sample variance-covariance matrix into the between- and within-level to analyse the factor structure on both levels (Muthen & Muthen, 1994). Maximum Likelihood (ML) estimation was used to estimate the multilevel model (Harrington, 2009) since the data was normally distributed (Brown, 2006). Goodness-of-fit indices were obtained for the Multilevel CFA, namely the Chi-square (χ^2), Comparative Fit Index (CFI), Tucker Lewis Index (TLI), Root Mean Square Error of approximation (RMSEA), standard root mean residual (SRMR) (Hair et al., 2010). Regarding the RMSEA a value of 0.05 indicates appropriate fit, values between 0.05 and 0.08 indicate reasonable fit, while scores over 0.10 suggests poor fit. For the TLI and CFI, values greater than roughly .90 is deemed appropriate (Kline (2005). Regarding the SRMR, values less than 0.10 are considered favourable.

Secondly, we applied Multilevel Mediation Analysis on the lower level to determine the path analysis of weekly job crafting, work engagement, psychological meaningfulness and job performance (cf. Kenny et al., 2003; Preacher & Hayes, 2008; Tingley et al., 2014) and we tested both an intercept-only (null model) and intercept-slope (hypothesized) model for each analysis, the latter allowing for week-level variation of the relationships. To test whether week-level variation is evident, we applied Log Liklihood (LogLik) scores, variance, a chi-square difference test, the Akaike Information Criterion (AIC), and the Bayesian Information Criterion (BIC) which favoured the week-level variation models for each hypothesis. We further determined the interclass correlation coefficients (ICC) to confirm that multilevel mediation was an appropriate method of analysis. Using the Mediate function in Rstudio, we determined the indirect effects of Y on X through M (see Preacher & Hayes, 2008) on the week-level utilizing Bootstap confidence intervals to determine the multilevel mediation effects through quasi-Bayesian Monte Carlo simulations (Tingley et al., 2014).

Results

Pre-analysis results

Prior to testing the hypotheses, we conducted a Multilevel Confirmatory Factor Analysis on the fifteen JCQ items. We examined the interclass correlation coefficients of the fifteen JCQ items (Field et al., 2012) which ranged between .26 and

.53 (ICC's for each dimension of the hypothesized model is reported in Table 2), indicating that multilevel analysis is suitable for this study. The data was inspected for normality, which fell well within the recommended cut-off scores (Field et al., 2012). The three-factor model compared to three alternative models fit the data reasonably well (chi-square difference tests showed that the three-factor model fit significantly better to the data than any of the other models, χ^2 (4) ≥ 141,15, p < .001) and establishes support to the proposed three factor structure of the JCQ (Slemp & Vella-Brodrick, 2013). The results of these analyses are presented in Table 1 and Figure 1 showing the factor-loadings of the three-factor model of job crafting on the within-person and between-person levels. All items loaded significantly on the intended factors and showed small residual variances.

Additionally, because cognitive job crafting and meaningfulness show potential content overlap, we ran a multilevel confirmatory factor analysis to determine whether cognitive crafting and meaningfulness are distinct. The fit statistics show that the two-factor (cognitive crafting and meaningfulness) model as opposed to a one-factor (cognitive crafting and meaningfulness combined) model fit the data best (see Table 1).

Descriptive statistics

Table 2 shows the mean scores, standard deviations, correlation coefficients and ICC values for each of the study variables.

Table 1. Goodness-of-fit indices.

Model	χ^2 (df)	CFI	TLI	RMSEA	SRMR	AIC|BIC
One-Factor Model 1 (Null model)	812.87 (180)*	.69	.62	.10	W =.17 | B =.40	20,555.49 | 20,853.55
Two-Factor Model A	584.87 (178)*	.80	.76	.08	W =.18 | B =.46	20,343.76 | 20,649.74
Two-Factor Model B	654.84 (178)*	.76	.71	.08	W =.17 | B =.23	20,380.22 | 20,686.20
Two-Factor Model C	535.69 (178)*	.85	.82	.07	W =.12 | B =.31	20,248.99 | 20,554.97
Three-Factor Model (Hypothesized model)	394.54 (174)*	.91	.89	.05	W =.07 | B =.09	20,115.83 | 20,437.71
One-Factor Model 2 (Null model)	634.77 (80)*	.80	.79	.13	W =.19 | B =.21	12,153.11 | 12,371.67
Two-Factor Model	252.06 (86)*	.95	.94	.07	W =.05 | B =.09	11,774.40 | 12,000.91

*p <.001 | One-Factor Model 1 = Task + Cognitive + Relational; Two-Factor Model A = Task + Cognitive combined and Relational; Two-Factor Model B = Relational + Cognitive combined and Task; Two-Factor Model C = Relational + Task combined and Cognitive; N = 402 occasions (3 weeks nested in 134 employees).

**p <.001 | One-Factor Model 2 = Cognitive crafting and Meaningfulness; Two-factor Model = Cognitive crafting and Meaningfulness; N = 402 occasions (3 weeks nested in 134 employees).

Table 2. Descriptive statistics, interclass correlation coefficients, and correlations.

Variable	Mean	SD	ICC	1	2	3	4	5
1. Task rafting	4.53	1.22	.41	-				
2. Cognitive crafting	4.97	1.36	.52	.57*	-			
3. Relational crafting	3.44	1.38	.46	.51*	.40*	-		
4. Meaningfulness	6.27	1.39	.44	.50*	.61*	.32*	-	
5. In-role performance	5.57	.99	.37	.22*	.19*	.08	.25*	-
6. Extra-role performance	5.04	1.45	.50	.24*	.20*	.30*	.26*	.37*

*p <.001; results show peer-ratings of in-role and extra-role performance; N = 402 occasions (3 weeks nested in 134 employees)
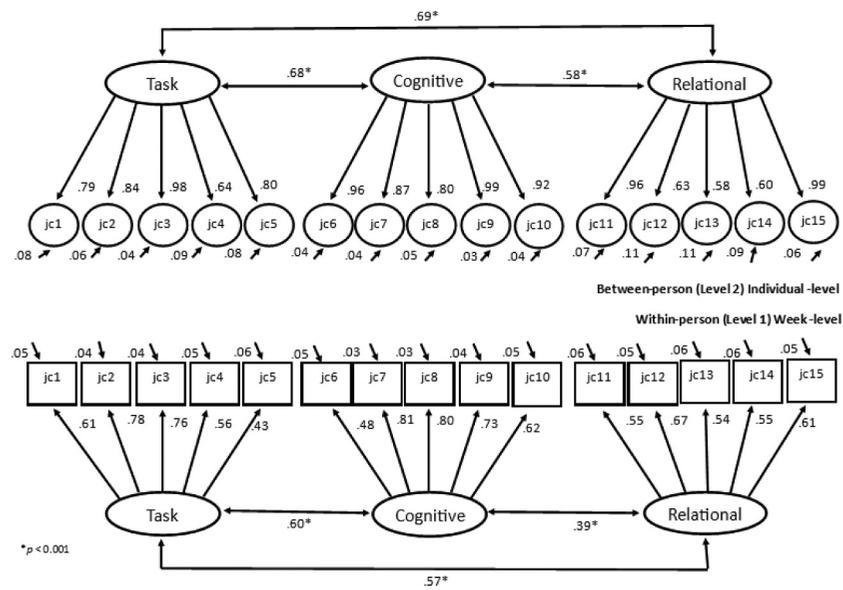
Figure 1. Factor loadings for the three-factor model of job crafting.

Prior to testing our hypotheses, we explored the factorial structure of the measures through a multilevel confirmatory factor analysis. The hypothesized measurement model consisting of the six proposed variables listed in the study (three job crafting factors, meaningfulness, in-role and extra-role performance) showed satisfactory fit, $\chi^2 = 393.34$; df. = 175; χ^2/df = 2.25; $p < 0.001$; CFI = .90; TLI = .91; RMSEA = .05; RSMR within = .08; RSMR between = .07. We tested alternative models namely, Alternative model 1, where job crafting was used as a total score with meaningfulness, peer-rated in-role and peer-rated extra-role performance ($\chi^2 = 918.89$; df = 179; χ^2/df. = 5.13; $p < 0.001$; CFI = .65; TLI = .68; RMSEA = .09; RSMR within = .18; RSMR between = .41), Alternative model 2, where job crafting was tested as two-factor model A (Task + Cognitive combined with Relational) with meaningfulness, in-role performance and extra-role performance ($\chi^2 = 570.87$; df. = 178; χ^2/df. = 3.21; p < 0.001; CFI = .79; TLI; RMSEA = .78; RSMR within = .16; RSMR between = .43), Alternative model 3, where job crafting was tested as two-factor model B (Relational + Cognitive combined with Task) with meaningfulness, in-role performance and extra-role performance ($\chi^2 = 656.76$; df. = 178; χ^2/df. = 3.69; p < 0.001; CFI = .74; TLI; RMSEA = .71; RSMR within = .15; RSMR between = .33) and Alternative model 4, where job crafting was tested as two-factor model C (Relational + Task combined with Cognitive) with meaningfulness, in-role performance and extra-role performance ($\chi^2 = 556.67$; df. = 178; χ^2/df. = 3.13; p < 0.001; CFI = .80; TLI; RMSEA = .82; RSMR within = .13; RSMR between = .30).

Hypotheses testing continued
Hypothesis 1 suggested that there is a positive relationship between weekly a) task, b) cognitive, and c) relational crafting and weekly meaningfulness. Reported in Table 3, weekly *task* ($\gamma = .29$; $p < .001$; t = 4.73) and *cognitive* crafting ($\gamma = .46$; $p < .001$; t = 7.06) positively predicted weekly *meaningfulness*,

while *relational* crafting did not ($\gamma = .02$; $p = .71$; t = 0.37). This supports hypothesis 1a and 1b.

Hypothesis 2 suggested that a) task, b) cognitive and c) relational crafting are positively related to peer-rated in-role performance, through psychological meaningfulness. Based on the results reported in Table 5, hypotheses 2a and 2 c were supported. Weekly *task* crafting (2a) is mediated by *meaningfulness* on *in-role performance* as the confidence intervals for *in-role performance* did not include a value of zero (95% CI = [0.35/0.53]; $p < 0.001$), while weekly meaningfulness mediated the relationship between *cognitive* crafting (2b) and *in-role performance* during weeks, which is supported by the confidence intervals not including a value of zero for *in-role performance* (95% CI = [0.34/.56]; $p < 0.001$). No mediation was found for *relational* crafting on *in-role performance* through *meaningfulness* because the confidence intervals included a value of zero for *in-role performance* (95% CI = [0.00/-0.005]; $p = 0.52$) and the relationship was insignificant. Additionally, *relational* crafting did not directly relate to *in-role performance* ($\gamma = -.03$; $p = .22$; t = −1.24; see Table 4) or *meaningfulness* ($\gamma = .02$; $p = .71$; t = 0.37; see Table 3).

Table 3. Direct effects of weekly job crafting (independent variable) on meaningfulness (mediator).

	Dependent variable: Meaningfulness				
	Null Model (Intercept only)		Model 1 (Intercept and slope)		
Variable	Estimates	SE	Estimates	SE	t
Intercept	14.00	1.24	13.30	1.65	8.07**
Task crafting			0.30**	0.06	4.27**
Cognitive crafting			0.46**	0.06	7.08**
Relational crafting			0.02	0.04	0.37
−2 x log		−1147.35		−1115.04	
Δ – 2 log				−32.31**	
df		9		18	
AIC		2132.72		2266.08	
BIC		2348.08		2336.81	
Variance	22.37	4.73	9.61	3.10	

AIC, Akaike information criterion; BIC, Bayesian information criterion **p <.001, *p <.05; results show peer-ratings of in-role and extra-role performance; N = 402 occasions (3 weeks nested in 134 employees).

Table 4. Direct effects of weekly job crafting (independent variable) on peer-rated performance (dependent variable) – Pre step analysis.

| | Dependent variable: In-role performance | | | | | Dependent variable: Extra-role performance | | | | |
| | Null Model (Intercept only) | | Model 1 (Intercept and slope) | | | Null Model (Intercept only) | | Model 1 (Intercept and slope) | | |
Variable	β	SE	β	SE	t	β	SE	β	SE	t
Intercept	13.31	.69	12.89	.84	15.28	10.54	.94	10.76	1.04	10.27
Task crafting			.10*	.03	3.34			−.01	.05	−0.22
Cognitive crafting			.08*	.02	2.84			.10*	.04	2.48
Relational crafting			−.03	.03	−1.24			.12*	.04	3.01
−2 x log		−902.57		−886.13			−1018.17		−1009.36	
Δ − 2 log				16.44*					−9.48*	
df		239					7		9	
AIC		1823.15		1808.26			2054.34		2054.72	
BIC		1858.45		1878.84			2089.61		2125.26	
Variance	4.38	2.09	2.84	1.69		11.04	3.32	4.74	2.18	

AIC = Akaike information criterion; BIC = Bayesian information criterion **$p <.001$, *$p <.05$; $N = 402$ occasions (3 weeks nested in 134 employees).

Table 5. Indirect effects of weekly job crafting on in-role and extra-role performance through meaningfulness.

| | Dependent variable: In-role performance | | | | | Dependent variable: Extra-role performance | | | | |
| | Null Model (Intercept only) | | Model 1 (Intercept and slope) | | | Null Model (Intercept only) | | Model 1 (Intercept and slope) | | |
Variable	Estimate	SE	Estimate	SE	t	Estimate	SE	Estimate	SE	t
Intercept	12.16	.79	11.43	1.01	11.37**	9.19	1.08	9.30	1.22	7.62**
Task crafting			.07*	.03	2.30*			−.03	.05	−0.75
Cognitive crafting			.03	.03	1.07			.06	.04	1.49
Relational crafting			−.03	.03	−1.25			.11**	.04	2.93*
Psychological meaningfulness			.11**	.03	3.86**			.10**	.04	2.44*
−2 x log		−895.84		−873.41			−1010.48		−1001.49	
Δ − 2 log				−22.43**					−8.99**	
df		10		24			10		24	
AIC		1811.68		1794.82			2040.96		2050.98	
BIC		1850.87		1888.87			2080.09		2144.90	
Variance	4.85	2.20	2.60	1.61		10.83	3.29	4.66	2.15	

AIC = Akaike information criterion; BIC = Bayesian information criterion **$p <.001$, *$p <.05$; $N = 402$ occasions (3 weeks nested in 134 employees).
Task Crafting through meaningfulness on in-role performance (95% CI = [0.35/0.53]; $p < 0.001$); Cognitive crafting through meaningfulness on in-role performance (95% CI = [0.34/.56]; $p < 0.001$)
Cognitive crafting through meaningfulness on extra-role performance (95% CI = [0.33/.52]; $p < 0.001$)

Hypothesis 3 suggested that a) task, b) cognitive and c) relational crafting are positively related to peer-rated extra-role performance, through psychological meaningfulness. As reported in Table 5, the results supported only hypothesis 3b. Weekly *cognitive* crafting indirectly influenced *extra-role performance* through *meaningfulness* due the confidence intervals not including a value of zero for extra-role performance (95% CI = [0.33/.52]; $p < 0.001$). No mediation was found for neither *task*- nor *relational* crafting on *extra-role performance* since the confidence intervals included values of zero for extra-role performance (95% CI = [0.00/-0.00]; p = 0.60). Further to, because weekly *task* crafting did not directly predict *extra-role performance* ($\gamma = .06$; $p = .80$; t = −.21; Table 4) and *relational* crafting did not directly predict *meaningfulness* ($\gamma = .02$; $p = .71$; t = 0.37; Table 3), no mediation was found for these two crafting dimensions. It should be noted that weekly *relational* crafting is important for weekly *extra-role performance* ($\gamma = .12$; $p < 0.001$; t = 3.01; see Table 4).

Additional analyses

We tested for possible lagged effects and found that job crafting in previous weeks influenced meaningfulness and job performance in the weeks that follow (see Table 6). Specifically, *task* ($\gamma = .30$; $p < 0.001$; t = 4.72) and *cognitive* ($\gamma = .46$; $p < 0.001$; t = 7.08) crafting had a lagged effect on *meaningfulness*.

Further, *task* crafting ($\gamma = .07$; $p < 0.05$; t = 2.29) and *meaningfulness* ($\gamma = .10$; $p < 0.001$; t = 3.86) had a positive lagged effect on *in-role* performance, while relational crafting ($\gamma = .11$; $p < 0.001$; t = 2.93) and *meaningfulness* ($\gamma = .10$; $p < 0.05$;

Table 6. Lagged effects of job crafting on meaningfulness and performance.

| | Dependent variable: Meaningfulness | | |
Variable	Estimates	SE	t
Intercept	13.30	1.64	8.07**
Lag of Task crafting	0.30	0.06	4.72**
Lag of Cognitive crafting	0.46	0.06	7.08**
Lag of Relational crafting	0.01	0.05	0.37
	Dependent variable: In-role performance		
Intercept	11.43	1.01	11.37**
Lag of Task crafting	0.07	0.03	2.29*
Lag of Cognitive crafting	0.03	0.02	1.07
Lag of Relational crafting	−0.03	0.02	−1.27
Lag of Meaningfulness	0.10	0.02	3.86**
	Dependent variable: Extra-role performance		
Intercept	9.30	1.22	7.62**
Lag of Task crafting	−0.04	0.04	−0.75
Lag of Cognitive crafting	0.06	0.04	1.49
Lag of Relational crafting	0.11	0.04	2.93**
Lag of Meaningfulness	0.10	0.03	2.44*

AIC, Akaike information criterion; BIC, Bayesian information criterion **$p <.001$, *$p <.05$; results show peer-ratings of in-role and extra-role performance; $N = 402$ occasions (3 weeks nested in 134 employees).

t = 2.44) had a positive lagged effect on *extra-role* performance. These findings echo the above weekly relationships.

Discussion

The main aim of this study was to test whether task, cognitive and relational crafting relates to peer-related in-role and extra-role performance through meaningfulness on a weel level. Additionally (pre-analysis), this study aimed to show the validity of the three-factor measure of job crafting by Slemp and Vella-Brodrick (2013) at the within- and between-person level. We found that meaningfulness mediates the relationship between task- and cognitive crafting respectively on peer-rated in-role performance and cognitive crafting on peer-rated extra-role performance on a week-level, while also finding support for a three-factor structure of job crafting on within- and between person level.

Pre-analysis

Although the dimensionality of job crafting has been tested over time before (e.g., Nielsen et al., 2017; Petrou et al., 2012; Tims et al., 2012), the JCQ has not previously been validated over time. Generally, very little research includes a job crafting model that explains how employees change the cognitive boundaries of their work, with even less insights offered on how cognitive crafting can fluctuate over time. Slemp and Vella-Brodrick (2013) found a three-factor structure of the JCQ, which the results of this confirm on the between-person and within-person level. Further to, the results of this study confirms that cognitive crafting and meaningfulness – concepts that share theoretical overlap – measure distinct factors.

Job crafting and meaningfulness

Much research has been done on job crafting in general (see Rudolph et al., 2017), but few studies report the empirical relationship that exist between meaningfulness over time (e.g., on a weekly basis) and changing physical job boundaries *and* psychological perceptions respectively. While Job Crafting Theory places emphasis on the fact that employees craft their jobs on a continuous basis (Berg et al., 2013; Wrzesniewski & Dutton, 2001), a key assumption is that employees choose to exert control over their work (through job crafting) for a number of positive work outcomes, such as positive meaning, organizational commitment, work engagement and performance (Wrzesniewski et al., 2013). According to Wrzesniewski et al. (2013), job crafting is an important foundation that creates meaning. Much research has proven that the task itself and relationships at work (and having control over these) can foster positive work outcomes (see Rudolph et al., 2017; Tims et al., 2015; Wrzesniewski et al., 2013) and this study uniquely contributes by showing that weekly task (physical boundaries) *and* cognitive (psychological boundaries) crafting specifically is related to a key positive work outcome, namely weekly meaningfulness at work.

The *self* is often neglected in empirical research as a source of creating meaning at work. The theoretical assumption exists that if employees can align or change work boundaries to improve the fit between the job and person, work can be aligned to an employee's self-concept to create personal meaning (Rosso et al., 2010; Wrzesniewski et al., 2013). Cognitively pondering about ways to improve work is a psychological process and this research points out that employees participate in cognitive crafting to create meaningfulness. This is a process that can satisfy psychological needs relating to work (see Slemp et al., 2015).

Cognitive crafting specifically relates to meaningfulness by allowing employees control over how they understand and align their work to what is personally meaningful to them and their self-concept (Slemp & Vella-Brodrick, 2013). Employees do this by thinking about the impact the work they do has on other people instead of just viewing it as a menial task (e.g., if processing paperwork for monetary payout of a client is viewed as making a difference in someone's life instead of it being viewed as administration).

If employees change the way they work by considering how their jobs could affect themselves and others, they should experience their own work as meaningful because they created meaning for another. Berg et al. (2010) further indicate that employees are more motivated to change their work boundaries if it means that their work will align better with their personal strengths, ideals and motives. Understanding this psychological process between the self and work is useful since it is not always possible to change physical job tasks, therefore, changing cognitive boundaries pertaining to work is a valuable and useful way to be innovative and create meaning within jobs that do not allow for structural changes. There is also value in understanding the *self* and cognitive processes in a work role because the person plays an important role in creating their own meaning and motivation. Job crafting, specifically cognitive crafting thus helps employees to express what they value and what motivates them at work (see Wrzesniewski et al., 2013).

This research did not find support for a weekly relationship between relational crafting and meaningfulness. This contradicts the theoretical assumption that this relationship will exist (Berg et al., 2013; Wrzesniewski & Dutton, 2001). Wrzesniewski et al. (2013) pointed out that relationships with others at work can be a path to create meaningful work; however, the role of relationships with others a work are only powerful when an employee views their work as an important place to build lasting social relationships. Therefore, meaningfulness is only created if employees actively spend time changing or thinking about the relational boundaries at work as a key factor in the way they experience their work.

Social relationships at work might influence healthy organizational outcomes (Bakker & Demerouti, 2017; Bakker et al., 2004), but it is possible that crafting those social relationships act as a resource in conjunction with other resources (i.e. autonomy). The need to have control over tasks or cognitive aspects of work may be more important for meaningful work as it aligns with the self-image of people on a personal level, when compared to connecting and building social relationships with each other (see Rodgers, 1995; Wrzesniewski & Dutton, 2001). Further to, Rofcanin et al. (2018) pointed out that people might choose to withdraw from social job crafting efforts in their attempt to create improved person-job fit. This strategy may

lead to negative work outcomes which inherently affect meaningfulness. It is also possible that with emerging technology and the need to be more innovative, work via online resources and constant changes in work environments may lead to employees spending less time connecting with people.

Meaningfulness as a mediator of job crafting and performance

The findings of this research revealed that weekly meaningfulness acted as a mediator between (only) task and cognitive crafting respectively on peer-rated in-role performance and cognitive crafting on peer-rated extra-role performance. Meaningfulness was found to be important for productive work outcomes (see Bailey et al., 2018; Lichtenthaler & Fischbach, 2019) and therefore the finding of this research was expected. A study by Tims et al. (2015) found support for meaningfulness as a cross-lagged mediator between job crafting and performance (Tims et al., 2015); however, this research did not include cognitive crafting. This research fills the gap in research by specifically proving week-level relationships between job crafting, meaningfulness and performance.

The nature of in-role performance specifically is such that employees aim to do well with the requirements of their specific and personal task (Campbell, 1990), thus proactively changing task requirements, such as introducing new ways of working will enable employees to perform better and reach personal task goals. This relationship further exists between task and cognitive crafting and in-role performance because in-role performance is defined by personal effort employees put in to achieve work goals (see Campbell, 1990; Rosso et al., 2010) and task and cognitive crafting is the effort employees put it to align their work with what is important to them on a personal level (see Wrzesniewski & Dutton, 2001). This is especially the case with cognitive crafting, where cognitive boundaries are changed to align with the self-concept and personal motivations are also aligned in intrinsic role tasks or performance and personal achievements. Employees that proactively adjust and craft their work, were found to perform better in their jobs (Bindl & Parker, 2011; Tims et al., 2012, 2013).

Furthermore, employees will help colleagues reach their work performance goals, if they created meaningfulness through cognitive crafting (e.g., perhaps thinking of the significance of their contribution towards others' task). In line with research stating that the cognitive crafting process also involves thinking about the tasks at work as part of the collective whole by (Berg et al., 2008) and evident from our findings; employees may be more willing to invest time in other roles, e.g., extra-role performance (assisting colleagues with their tasks: Williams & Anderson, 1991).

Overall, we argue that when employees craft their work, even cognitively, they create a better fit with their job, and they increase their self-esteem. Creating a better fit between personal preferences and/or abilities and the job, people craft meaning. Because of this, employees develop the energy needed to invest considerable effort in work. During the weeks people experience meaning, they know why they do their best to tackle complex work problems and know why they need to persist when confronted with hindrance job demands.

The experienced meaningfulness thus helps them perform at work, while it also helps employees invest in their colleagues and to help them with their job task (they show extra-role performance).

Even though weekly relational crafting was not related to meaningfulness, it was important for extra-role performance specifically. This is to be expected since extra-role performance represents the investment that employees make towards reaching the group goal (Williams & Anderson, 1991) and therefore relies on employees assisting each other. This signals a reciprocal relationship where employees make use of and optimize their social resources. After having asked colleagues for help or making time to talk with colleagues that went out of their way to get to know you (relational crafting), employees may want to reciprocate helping colleagues who have helped you (extra-role performance).

Lastly, we found that task and cognitive crafting had a lagged effect on meaningfulness, while task crafting showed a lagged effect on in-role performance and relational crafting showed a lagged effect on extra-role performance. Notably, creating meaningfulness had a lagged effect on both forms of performance. These findings strengthen the causality of our week-level relationships.

Limitations and recommendations

The study yielded important information but had some limitations. It is possible that the effects of job crafting on meaningfulness can be fully understood if we examine this for more weeks. Diary methods hold many benefits in helping us understand behaviour in the workplace (see Ohly et al., 2010). While it is optimal to have at least five days of occasions in a day-level diary (Ohly et al., 2010), how behaviour manifests over time is still largely unknown due to it being subjective (Iida et al., 2012). The occasion points for week-level diary studies range between three- and five weeks (Bakker & Bal, 2010; Bakker & Sanz-Vergel, 2013) and even though we opted for a three-week diary data collection and gained a good understanding of the underlying relationships, extending the weeks may produce more in-depth results.

We used only peer-ratings of performance and future studies should include other alternative ratings of performance, such as supervisor-ratings, to truly understand how job performance is viewed. Our understanding of how job crafting measures over time could be analysed by looking at demographic variables such as gender. We did not test whether job crafting is rated differently based on for example, gender and only focused on an initial multilevel validation thereof. Although this study supports that job crafting is indeed a state-like variable, we can increase our understanding by validating the measure in more contexts over time and by looking at demographic difference. Although job crafting is seen as a proactive workplace behaviour that can enable people to make changes to their work and which enables experience meaningfulness, future research could study the important benefits of job crafting in jobs characterized by high job demands and high resources (e.g., active jobs) in relation to meaningfulness. As a research on job crafting are becoming more focused on single dimensions of job crafting (see Rocfanin et al., 2019), future

studies should explore the possibility of different facets of and conditions under which cognitive crafting manifests. Lastly, meaningfulness is known to be defined in many ways. Even though we contribute by examining meaningfulness on a weekly basis, we only applied one form of meaningfulness. Future studies could focus on extending it to include different conceptualizations of meaningfulness (cf. Rosso et al., 2010).

Practical implications

This study shows that weekly job crafting is positively related to weekly meaningfulness, which increases weekly job performance. Job crafting empowers employees to have control over and actively improve their work and because it is a way to create meaningfulness, encouraging job crafting behaviour is crucial for both the organization and its employees. Job crafting is an effective way to create active jobs (characterized as jobs which have high challenges but also having resources to be able to accommodate for those challenges, see Petrou et al., 2012), whereby employees can be innovative in their work. To enable proactive behaviour at work, organizations may offer to facilitate training interventions focused on how to participate in job crafting behaviour (Gordon et al., 2018; Oprea et al., 2019). Employees may also benefit from organizations training their leaders to help guide their employees in their crafting efforts (Thun & Bakker, 2018; Wang et al., 2017). Organizations may further create new Human Resource initiatives that help employees to craft their tasks and relationships by providing opportunities to change work boundaries, such as job rotation, allowing employees to engage in tasks that fit their skills, providing opportunities to work with different colleagues, and/or engage in project-based team work which promotes new opportunities to manage tasks and relationships. While jobs are often characterized by high demands, organizations can provide more resource to employees, such as autonomy, to produce active jobs. This has been found to development new behaviour patterns at work (Petrou et al., 2012), which produces innovation (Martin et al., 2007). The application of new ideas and innovation may develop proactive workplace behaviour and prompt continuous job crafting behaviour (Petrou et al., 2012). This study specifically advances our understanding of crafting cognitive aspects of the job in relation to meaningfulness and job performance. To encourage weekly cognitive crafting, organizations can help employees to reflect on how the work they do give meaning to their personal lives and the community. Helping employees to realize the importance of their work and encouraging them to continuously reflect on how their work gives meaning can inspire in employees the need to continuously create meaningful work.

Conclusions

Few studies investigated meaningfulness over weeks (see Tims et al., 2016), while no research investigated weekly meaningfulness specifically in relation to cognitive job crafting behaviours and other ratings of performance. We therefore address this gap by showing that weekly meaningfulness indirectly effected task crafting (partial) and cognitive crafting (full) on in-role performance, while cognitive crafting indirectly influenced peer-rated extra-role performance through meaningfulness. Slemp and Vella-Brodrick (2013) specifically highlighted the need for more research into cognitive crafting and based on the results of this study it is evident that cognitive crafting plays and important role in fostering both in-role and extra-role performance through meaningfulness. As previously mentioned, not all jobs provide opportunities to change job content, and therefore we need to encourage employees to create meaningful experiences by cognitively crafting their jobs. This further supports our argument that the achievement of personal work goals (in-role performance) and organizational work goals (extra-role performance) is reliant on the continuous changes employees make to their jobs by changing their job content and aligning their work with their own self-concept and purpose in life because these changes will foster meaningfulness (cf. Slemp & Vella-Brodrick, 2013; Wrzesniewski & Dutton, 2001).

Disclosure statement

No potential conflict of interest was reported by the authors.

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